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IN B-TO-B MARKETPLACE, REALITY BITES

Exchanges abound, but business is sparse so far

BY JULIA KING

The promises being made about Web-based business-to-business exchanges bring new meaning to the word *hyperbole*.

Consider the World-Wide Retail Exchange. It touts itself as the retail industry's largest business-to-business Internet exchange, with 14 founding members whose collective annual purchases total about $400 billion.

No matter that it has yet to process a single transaction or even select a technology plat-

Exchanges, page 16

Firms wait on XML, increase use of EDI

BY CAROL SLIWA
BOSTON

The technology industry may be buzzing about XML and business-to-business marketplaces, but within large corporations, the old tried-and-true electronic data interchange initiatives still rule.

Users attending last week's Data Interchange Standards Association conference here said not only that EDI is alive and well within their companies, but also that its usage actually continues to grow — be-

EDI, page 16

STORES OK WITH RISE OF WIRELESS

Say shoppers with Web phones not a threat

BY BOB BREWIN AND CAROL SLIWA

Consumers have already started to use their wireless, Web-enabled phones and personal digital assistants to engage in comparison shopping while strolling around traditional retail outlets. That phenomenon, some dot-com companies and wireless carriers say, could represent a significant shift in buying habits that companies need to be prepared for.

But at least one analyst views the hype over wireless Web shopping as an attempt by dot-coms to use technology to steer attention away from the fact that few of them are making any money — a problem that this shift probably still won't solve.

In fact, officials at large retailers interviewed last week, including Sears, Roebuck and Co. and Tandy Corp., which operates the Radio Shack chain, said they welcome wireless comparison shopping and believe they can turn it to their advantage.

Sears, for instance, has a price-match guarantee. "The more information the customers have, the better chance we have at satisfying them," said spokesman Tom Nicholson.

But Amazon.com Inc.'s cellular product manager, Chuck Napier, said he thinks wireless shopping will have a "big impact" on traditional retailers. The Seattle-based online retailer has embraced an "anytime,

SPRINT PCS Touchpoint

Wireless, page 14

ERIC YAHO

DOJ GOES FOR JUGULAR: BREAK IT UP

Asks judge to impose maximum penalty on Microsoft; most users say it's overkill

BY PATRICK THIBODEAU
WASHINGTON

The U.S. government last week seized upon the remedy that Microsoft Corp. has feared the most: a breakup of the company founded 25 years ago by an ambitious college dropout who believed in the future of the PC. Microsoft has called it a "regulatory death sentence."

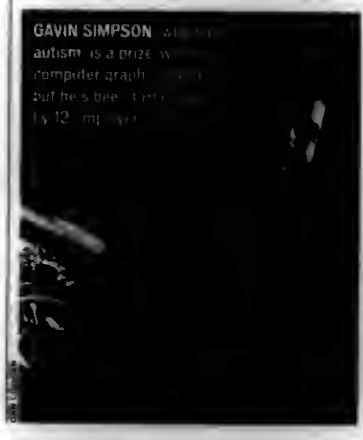
The success of Bill Gates' company has been the envy of U.S. business. But a judge ruled last month that Microsoft's profits were partly the result of illegal actions that violated U.S. antitrust laws.

And the government says the only way to fix the problem, restore competition and free the software industry from what the judge has called Microsoft's "oppressive thumb" is to break the company into two pieces.

Microsoft's response to the announcement Friday was immediate and as expected.

"Breaking up Microsoft into separate companies is not in the interest of consumers and

Microsoft, page 101



OVERLOOKED

PEOPLE WITH PHYSICAL DISABILITIES are making progress in the IT field, but that's not so for the people with mental difficulties such as autism or schizophrenia. They show great aptitude for computer work, Gary H. Anthes reports, and yet they often get rejected for IT jobs because of odd mannerisms, poor communications skills and the stigma of mental disabilities. Advocates say IT managers are overlooking a largely untapped pool of candidates.

Story begins on page 50.

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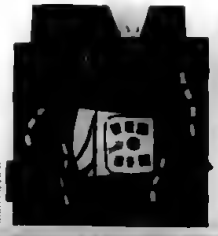
MOVING COBOL TO THE WEB – SAFELY

As companies find that they need to make information from secure mainframes available on the Internet, they are developing a variety of strategies to deal with new security risks. Page 76



WHO WANTS TO BE A MILLIONAIRE?

Any true IT superstar, of course. So if you want to lure one, you'd better offer a ton of stock options. Or a month's paid vacation. Or a brand-new sports car. Heck, why not just make it a million bucks? Page 86

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MAY 1, 2000

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QUICKSTUDY

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80 PRUDENTIAL INSURANCE uses emerging CIM standards in its operations control center to manage systems worldwide.

Kick open doors; break down barriers. Break some glass if you have to, but get this thing rolling.

RE AIRCRAFT ENGINES CEO JIM McRERNEY'S ORDERS TO FORMER GREEN BERET JOHN ROSENFELD, WHOSE TASK WAS TO RESTART A STALLED E-COMMERCE OPERATION.
SEE PAGE 56.

OPINIONS

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AT DEADLINE

Luminaries Push For IT Green Cards

Computer industry luminaries, including Linus Torvalds, Steve Wozniak and Esther Dyson, will release an open letter to the U.S. Congress today on immigration reform. The letter urges lawmakers to help foreign technology workers become permanent legal residents rather than increase the number of H-1B guest-worker visas.

Boeing Signs Support Deal With Dell

Round Rock, Texas-based Dell Computer Corp. last week announced it has signed a multimillion-dollar service contract with The Boeing Co. that calls for it to support PCs and other devices used by more than 85,000 Boeing workers. Dell said it will support its own desktop and notebook PCs, plus other PC brands and peripherals such as scanners and printers. The contract covers Boeing locations in Seattle, Philadelphia and Wichita, Kan.

Intel Surprised by High PC Demand

Intel Corp. executives last week said they were surprised by higher-than-expected consumer demand for PCs at the end of last year and that they expect the demand to remain high for the rest of this year. At a meeting with financial analysts in New York, Intel CEO Craig R. Barrett said the high demand was driven by factors such as economic recoveries in Latin America and Japan and sustained growth in North America and Europe.

Intel to Discontinue Chip Serial Numbers

Intel plans to stop stamping serial numbers in its processors, starting with its Willamette chip, due later this year, the company said last week. Privacy groups protested last year after Intel announced that it planned to release Pentium III chips with the so-called processor serial number. The groups said the numbers could be used to track people's habits as they surf the Web.

UCITA Advances in Mid-Atlantic States

Maryland may become the first state to enact software licensing legislation

BY PATRICK THIBODEAU

THE CONTROVERSIAL Uniform Computer Information Transaction Act (UCITA) has established a beachhead in the technology-hungry Mid-Atlantic states.

Last week, Maryland became the second state to approve the legislation, preceded by Virginia. The act is also now being considered in Delaware.

In Maryland, which may become the first state to legally enact UCITA, the legislation is scheduled to take effect Oct. 1. Last month, Virginia delayed the act's implementation until July 2001, after companies with operations in the state, including Richmond, Va.-based Reynolds Metals Co. and Purchase, N.Y.-based International Paper Co., protested [News, March 6]. A committee has been formed to review the measure.

A number of end-user companies, libraries and special-interest groups have formed an organization, called 4Cite, to fight state-by-state adoption. But Randy Roth, director of corporate purchasing at Principal Financial Group in Des Moines, Iowa, and a leader in the anti-UCITA movement, said opponents are being outspent and outlobbied by the software industry.

"We're doing marginally" well in stopping UCITA, said Roth, adding that he believes many end-user companies "don't have a clue" about the act's impact on corporate software licensing. "The grassroots effort has to get larger," he said.

The act was drafted last July by the National Conference of Commissioners on Uniform State Laws and was sent to all 50 states for adoption.

UCITA has drawn opposition from corporate software customers because it would validate shrink-wrap and online license agreements, which vendors use to limit liability and set restrictions on software use. It would also allow "self help," under which licensors could threaten to disrupt licensees' systems, using "time bombs" or backdoor traps.

Opposing View

The software industry argues that UCITA will bring predictability to licensing.

UCITA merely gives parties the freedom to contract, said Keith Kupferschmid, intellectual property counsel for the Software & Information Industry Association, a trade group in Washington. "The parties should be able to agree to whatever they want," he said.

But James G. Neal, the dean of libraries at Johns Hopkins University in Baltimore, said UCITA will create a new kind of "digital divide," because institutions that don't have negotiating clout will be stuck with licensors' terms.

"If UCITA becomes the governing principle for electronic information, I don't have as strong a leg to stand on in my negotiations" with vendors, said Neal, who also oversees all the library's contracts.

Maryland's adoption of the legislation could have wide ramifications. Software companies, regardless of where they are located, may soon seek to apply Maryland's UCITA law in their contracts.

Whether vendors need to establish some form of nexus, or physical presence, in Maryland to do that has drawn a variety of opinions from legal experts.

UCITA's Progress

[illegible]

ADOPTED
Virginia
■ Takes effect July 1, 2001
Maryland
■ Takes effect Oct. 1, 2000
ACTIVELY CONSIDERING
■ Delaware
■ District of Columbia
■ Hawaii
■ Illinois
■ Oklahoma

FBI Investigates Attack Against AboveNet

Content, service providers affected

BY ANN HARRISON

The FBI is investigating a denial-of-service attack launched last week against a San Jose-based Internet provider that blocked traffic to almost 1,000 content and service providers for several hours, according to the victimized company.

FBI spokeswoman Deb Weierman said the bureau is looking into the incident "to see what activity went on." However, because it's an ongoing case, she couldn't divulge any details, she said.

Unlike the distributed denial-of-service attacks in February that flooded e-commerce sites with false data traffic, the attack against AboveNet Communications Inc. was directed against a switch in its network, said company officials.

AboveNet's Internet Service Exchange (ISX) network provides co-location services and Internet connectivity to companies such as NetZero Inc., CNet Inc. and America Online Inc., which wasn't affected.

"This wasn't just a teen-ager with a $300 Linux machine. This was someone who had time to learn the trade," said Paul Vixie, senior vice president of Internet services at White Plains, N.Y.-based Metromedia Fiber Network Inc., AboveNet's parent company. "It was certainly severe; most of our customers were impacted for hours."

According to Vixie, the attack was directed at a network device called a customer aggregation switch. The switch bundles co-location customers at the firm's ISX facilities and links them to an Internet backbone. Vixie said the attack hit three switches at facilities in New York, San Jose and Vienna, Va.

Vixie said the attacker exploited a flaw in the switch's configuration management process that his company has since changed. He said he believes there is little opportunity for copycat attacks because of the methods AboveNet uses to manage its network.

The company suffered rolling outages from midmorning Pacific Standard Time Tuesday until midafternoon. Many customers had alternative carriers that ensured their network traffic got through — a common fail-over strategy for high-end customers, Vixie said.

Very large customers, such as AOL, whose traffic wasn't funneled through the aggregation switch, weren't impacted. Vixie advised other information technology managers who may be concerned to consult with their switch vendors.

He said swift action is also needed to deflect such attacks. "We called everyone in on the shift and went through the network with a fine-tooth comb, not only to get everyone back up online but to make sure there were no time bombs," Vixie said. No back doors or other delays were detected, he added.

Stephen Northcutt, director of the Global Incident Analysis Center for the SANS Institute, declined to comment on the specifics of the AboveNet case. But he said the real issue isn't the attacks but rather what can be done about them. "What we need to focus on are the systems that are being compromised every day," he said.

Online editor Brian Sullivan contributed to this story.

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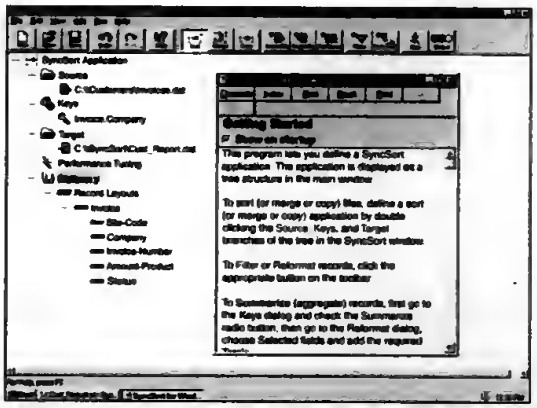

A familiar Windows-like graphical user interface gives you drag-and-drop access to all of SyncSort's powerful features on NT.

Staging your data with SyncSort lets you use the fastest database load techniques, reducing overall staging and load time by up to 90%. SyncSort also accelerates extract processing to speed warehouse-related statistical and reporting applications.

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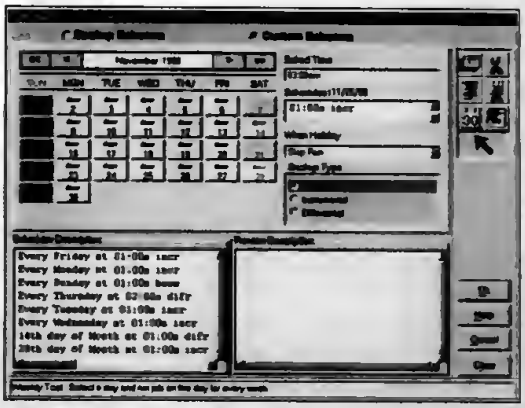

Through the simple, intuitive Backup Express interface, you can schedule backups, run restores, add devices, or check job status.

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Ford, Compuware Expand App Management Deal

Application management centers in Europe now going full-steam

BY LEE COPELAND

FORD MOTOR CO. and outsourcing services provider Compuware Corp. last week announced plans to ramp up two application management centers opened earlier this year in the U.K. and Germany. It's a move that will turn over management of the automaker's massive application portfolio entirely to the outsourcer.

The deal enables Ford to accomplish its goal of outsourcing the management of its 1,500 systems applications in several areas, including manufacturing, finance and sales.

Ford originally signed Farmington Hills, Mich.-based Compuware to a five-year outsourcing deal in 1998. That deal was estimated to be worth $100 million.

Ford officials wouldn't disclose financial terms of the contract extension but said Compuware is nearing the goal of cutting Ford's costs by 30% and improving application performance.

Officials said the partnership will help shift in-house information technology staff away from application maintenance.

More Leverage

"We can better leverage the talent and knowledge of Ford's IT professionals if they are less involved in support and maintenance and [are] working more closely on development projects for the core business," said Lynn Phillips, manager of applications for Ford's application management centers.

AT A GLANCE

The Ford Deal

- Compuware Corp. will manage Ford's 1,500 applications in areas such as manufacturing, finance and sales.
- Compuware will manage Application Management Centers in Dearborn, Mich., Essex, England and Cologne, Germany
- Contract will end in 2003

Albert Nekimken, an analyst at Input, a market research firm in Vienna, Va., said freeing up skilled workers for more challenging IT projects is often a key driver behind outsourcing deals.

"There is a tremendous skill shortage worldwide, [including] in Europe, and practically everyone is scrambling to meet all their technical needs," Nekimken said. "Ford has deep pockets and has decided that it makes more sense to use in-house IT for special, high-margin, high-return projects rather than [for] pedestrian tasks like managing applications."

According to Input, the manufacturing sector leads all other business sectors in arranging outsourcing contracts.

Of the $5.4 billion in contracts awarded to IT outsourcing firms in the first quarter of this year, 16% stemmed from discrete manufacturers such as automotive companies, 13% from process manufacturers such as pharmaceutical firms and 13% from state and local governments.

Ford first opened an application management center near its headquarters in Dearborn, Mich., two years ago. Ford and Compuware jointly staff the centers, with approximately 1,000 IT professionals in Dearborn and 350 in Europe.

Nekimken noted that large firms are increasingly demanding a local presence from outsourcers.

Keeping Tabs

"Despite the talk of e-business killing geography, firms want their data centers close by," Nekimken said. "There is significant turnover in IT, so they don't want to take the risk of losing sight of who is really involved on a day-to-day basis in managing their applications."

Ford also has a five-year, multimillion-dollar deal in place with IBM for project management and new application development. As with the Compuware arrangement, IBM staffs and manages three Accelerated Solution Centers for Ford in the U.K., Germany and Dearborn. ▶

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Mobile End Users Drive IT to Support Outsourced Unified Messaging Services

Sales representatives embrace single source

BY JAMES COPE

Managers and workers from business departments are forever dragging technology morsels into the office, and information technology managers ultimately have to embrace, ignore or disavow them. PalmPilots and PC shareware are good examples.

One of the latest end-user-driven trends, industry watchers say, is outsourced unified messaging, where a voice mailbox and Web and fax access are consolidated into one system with a single follow-me phone number.

Outsourced unified messaging "is absolutely a trend in the making," said Megan Gurley, an analyst at The Yankee Group in Boston.

Ed Kendrick, national sales manager for pharmaceuticals at BASF Corp. in Mount Olive, N.J., said one of his eight salespeople told him about a unified messaging system, Personal Assistant from Call Sciences Inc. in Edison, N.J. The system enables users to have a single phone number for their office phone, cellular phone and fax connections. Voice mail is stored as an audio file on the Call Science Web server, and a caller can access it either by phone or through a browser.

> Some of them have gotten rid of all their other phone numbers.
>
> ED KENDRICK, BASF CORP.

After a second salesperson asked for the service, five more jumped in. "Some of them have gotten rid of all their other phone numbers" and have put the single Personal Messenger number on their business cards, said Kendrick. The service costs $30 to $40 per month for each user, he said.

Listening to E-mail

Kendrick recently got an account of his own and is interested in a service that enables Call Sciences users to listen to fax and e-mail messages over the phone using text-to-voice conversion technology.

Mike Lanning, director of sales and marketing at Adaptive Broadband Corp. in San Jose took a more formal approach to unified messaging.

A manufacturer of microwave and satellite equipment, Adaptive uses a unified messaging system from Bellevue, Wash.-based Accessline Communications Corp.

Adaptive recently decided to consolidate three divisions. As part of this process, the company moved some of its customer service functions to an internal sales force to free up external salespeople for other tasks.

"Customers were calling outside sales reps for answers to simple questions," Lanning said. "This was causing undue delays for customers." But he said he knew they would habitually continue to call outside sales representatives first unless he made some changes.

Meanwhile, Lanning didn't want to cut the link between customers and the representatives. So he had Accessline set up a system that automatically ricochets calls to outside salespeople into the unified messaging system. The system prompts callers to place a new order, contact customer service or transfer to the outside sales representative.

Lanning said he pays about $15 per month per user for the service. Users of the service (not callers) can incur long-distance charges of 5 cents per minute when calls made to the unified messaging number are forwarded to numbers outside the local calling area. ▶

88% of the USA TODAY e-Consumer 50 run Oracle.

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BRIEFS

Boeing to Expand Broadband Offering

The Boeing Co. last week announced plans to extend broadband connectivity to passengers on commercial aircraft. The company will use existing satellites and antennae to provide in-flight voice and data connections that match the speed of cable modems.

Seattle-based Boeing said the system, called Connexion, is already available for use in private aircraft and that installation will begin in commercial aircraft late next year.

Wireless Wins Some, Loses Some

Although wireless market penetration will more than double in the next five years, wireless customer turnover rates, already growing at 4% annually, may continue to rise, too, according to a study released last week by Cahners In-Stat Group in Scottsdale, Ariz. Cahners analyst Ken Hyers said cellular and personal communications services carriers will add 20 million new subscribers this year but will lose 31 million subscribers to competitors.

Piranha Attack

Internet Security Systems Inc. says it has identified a backdoor password in Red Hat Inc.'s Linux Piranha product that could allow an attacker to compromise a Web server and deface and destroy a Web site. Updated software with patches is available on the Red Hat Web site, with Version 0.4.13-1.

EU Decries MCI/Sprint Planned Merger

The planned merger of MCI WorldCom Inc. and Sprint Corp. is running into trouble in the European Union, according to one EU commissioner. "Our investigation [into the proposed merger] has confirmed our serious concerns about the impact on competition, and in the next few days, we will send a statement of objections to the parties," said Mario Monti, the EU's competition commissioner, during a news conference last week.

Oracle Sets Restructuring Example for Its Users

Approximately 2,000 data-center employees to move to customer support

BY MARIA TROMBLY
PHILADELPHIA

ORACLE CORP. is about halfway through a massive restructuring project that promises to centralize and streamline its operations and move about 2,000 employees from data-center management to customer support.

Customers are keeping a close eye on the company, viewing it as an example of how to make a transition to the Internet-based economy using Oracle products.

At the Oracle Applications Users Group (OAUG) conference here last week, an Oracle executive said the company is about halfway to its goal of reducing 2,500 information technology staff members to just 500, redeploying the freed-up employees to customer support and reducing the number of data centers and independent sales teams.

Cutting Costs and Complexity

Oracle President Ray Lane said that as a result, the company has achieved a $200 million savings so far in operating costs.

"When you have multiple data centers, you're spending a lot of money," said Ron Wohl, Oracle's executive vice president for applications development, adding that the complexity of the original system also slowed down the corporation. "How do you optimize a deployment of personnel if your HR skill information is fragmented across 30 or 40 different instances?"

"I like to see them applying the product to their own organization [and] cutting out the mundane parts," said Mark Adam, a consultant at Minneapolis-based Orion Consulting Inc. who just finished installing Oracle's new HR Payroll application for a client.

The goal, Wohl told the OAUG, is to move to a self-service, fully automated approach in which all the details of Oracle's relationships with its customers are tracked.

Integrating Operations

Although the full eBusinessSuite that Oracle is deploying in-house won't ship until the end of this month, some Oracle customers have already begun integrating their operations, using early release versions of the software, earlier versions or a combination of the two.

For example, 20 customers are using the hosted version of eBusinessSuite 11i, Wohl said.

"The Oracle eBusinessSuite allowed us to focus on internal and external strategies simultaneously," said Drew Harris, information systems director at Cambridge, Mass.-based Nantucket Allserve Inc., which makes Nantucket Nectars juices.

The company went live with Version 11.03 on March 1 and plans to migrate to 11i in September.

"Our staff had been struggling with 600,000 cases [of juice] a month," Harris said. "Now, with the same staff, we could double or triple that — we don't know what the limit will be."

Business Debut

Oracle plans to roll out its primary applications

MARCH
■ Financials
■ Projects
■ Human resources
■ Supply chain and manufacturing
MAY
■ Order management
■ Customer relationship management
■ Hosted and conventional delivery

Oracle User Group Nixes Bid for Single Conference

Survey finds members want to keep independence

BY MARIA TROMBLY

The Oracle Applications Users Group (OAUG) has turned down Oracle Corp.'s proposal for a closer relationship, after the membership overwhelmingly rejected the company's bid in a survey last month.

In response, Oracle CEO Larry Ellison said last Thursday during a speech to the OAUG membership that the company would hold its own conference next spring — Oracle ApplicationWorld. He added that Oracle will continue to send representatives to OAUG conferences.

OAUG President Jeremy Young announced the decision to remain independent at the group's spring conference in Philadelphia last week.

Oracle had wanted to incorporate the organization's two conferences into its Oracle OpenWorld conference, holding one Oracle-hosted, applications-focused marketing event in the spring.

"We are very pleased with the overwhelming support for independence," Young said. "The most important thing for the board is that we are an independent organization, and we should remain an independent organization for the future."

The OAUG will continue to educate its members and provide a forum for communicating user concerns to Oracle, he told the membership.

With three quarters of OAUG's membership of 2,000 companies responding to the survey, 87% said they were opposed to holding one Oracle-sponsored event rather than having a separate users' conference.

The partnership would have fundamentally changed how the North American conferences were run, said Don Payne, executive vice president of OAUG's board of directors.

More Independence

Instead, the conferences will become a little more independent. For example, OAUG Executive Director Jim Collins said, Oracle has traditionally managed press relations at the conferences. "They will still invite their own press people," he said, "but the OAUG has its own media presence now and will invite its own press people to the event."

Collins said he expects to see more balanced coverage, with more opportunities for the public to get multiple perspectives on Oracle-related issues.

OAUG Takes a Vote

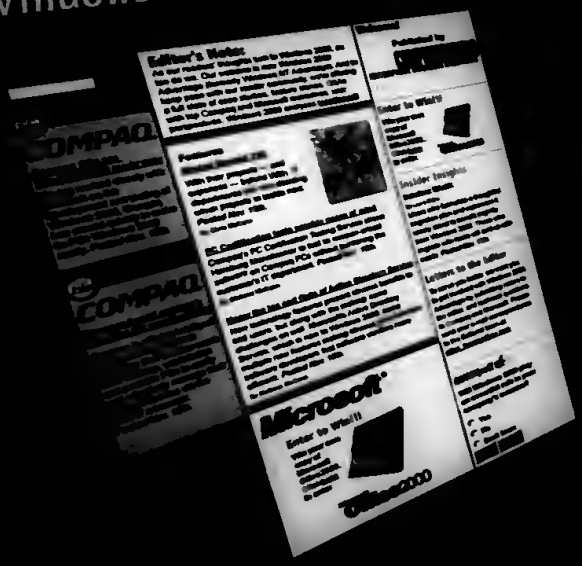
The Oracle Applications Users Group currently has two conferences in North America, one in the fall and one in the spring. Oracle has one of its own, Oracle OpenWorld, and plans to add Oracle ApplicationWorld next spring.

73%
Voted to continue holding separate conferences

87%
Voted to keep the conferences independent

Base: 2,000 OAUG members

Windows 2000 ADVANTAGE



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Study on R/3 Upgrade Cost Sparks Debate

BY KATHLEEN DHLSON

SAP AG's users may have to contend with "potentially long, complex, messy and expensive" upgrades of its R/3 business software, according to a survey of about 60 companies that are now upgrading or are planning to do so.

But some SAP customers disagreed with the study's results, saying the cost estimates are too high and don't reflect the product's long-range benefits such as lower cost of ownership and added functionality.

AMR Research Inc. in Boston last week said the companies with at least 1,000 users that it surveyed expect to spend an average of $4.5 million to upgrade their full SAP R/3 systems. That includes financial, sales, logistics, inventory and manufacturing applications.

Most of the companies surveyed are upgrading from R/3 3.x platforms to 4.6 versions.

"Chief financial officers will have to look at the cost of the upgrade and balance that with competing needs," said David Boulanger, an analyst at AMR.

As a result, IT budgets may have to be reshuffled to meet all those needs, he added.

But Bill Wohl, a spokesman for SAP America Inc., said AMR's contention that R/3 upgrades are "long and complex" is "misleading and sends SAP customers incomplete messages about their SAP systems going forward." The study doesn't reflect all the upgrade options SAP now offers and will offer in the future, he said.

Eric Ruhino, SAP America's chief operating officer, said the study was "biased" in several areas, such as in its omission of SAP's pricing flexibility on licensed products.

High Estimates

According to the study, about 20% of SAP's Fortune 2,000 customers will upgrade their R/3 setups this year, choosing between a straightforward technical upgrade and a more complex one that involves streamlining business processes and adding functionality. Those taking the latter approach typically will pay 25% to 33% of their initial investment to upgrade, the study said.

"This isn't just an ordinary upgrade," but it will ultimately be worthwhile, said John Amos, director of financial systems at McKesson HBOC Inc., a San Francisco-based drug distributor and software vendor. McKesson hopes to offer cross-selling among business units of the newly merged company by upgrading to R/3 4.6c later this year.

Reebok International Ltd. is also upgrading its R/3 system but will spend only about 10% of the amount the survey estimated, said Peter Burrows, chief technology officer at the Stoughton, Mass.-based footwear company.

But Boulanger said that the estimates were meant to be benchmarks and that user training may increase costs.

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Microsoft Pitches Win 2k to Wall Street

Ballmer calls Sun's 'big box' approach an 'old idea'

BY MARIA TROMBLY
NEW YORK

MICROSOFT has announced a major push into the financial services arena, spurred in part by what it claims is the rapid adoption of Windows 2000 by Wall Street's biggest players.

Those companies include Wells Fargo Services Co., Merrill Lynch & Co.'s Private Client Group and Credit Suisse First Boston Corp.

Microsoft Corp. CEO Steve Ballmer told attendees at a recent financial summit here that the company is pulling its key financial accounts into a single unit and beefing up its technical support arm.

Taking aim at Sun Microsystems Inc., Microsoft's arch rival on Wall Street, Ballmer claimed that Windows 2000-based systems are faster, more reliable and more scalable than those that run on Sun's Solaris environment.

For example, Ballmer claimed that a version of Windows 2000 running on a Compaq ProLiant 8500 server had a fourfold price/performance advantage over Sun's Solaris.

"The old idea was to get a big box and make sure it's big enough and, while you're at it, buy two big boxes because one might fail someday," said Ballmer. "But there's another approach, with many, many servers. You can add processing capability linearly as you need it.

"You can never design a box big enough to run the biggest application on the Web," he added. "Just when you think you've done that, the application gets bigger."

Sun executives agreed with him — but said they thought of that same thing themselves several years ago.

"We sell truckloads of servers for exactly what he's talking about, cheap low-end servers for linear scaling for everyone from ETrade to J. Crew," said Anil Gadre, Sun's general manager of Solaris, reached by phone at Sun in Palo Alto, Calif. "They're more stable and more reliable than the equivalent thing from the Microsoft space."

One company that agrees with Ballmer's view is Credit Suisse First Boston, which is shifting from Sun to Windows in a recently launched migration effort.

"We kept buying these big boxes," said Credit Suisse First Boston CIO Steve Long. "We bought five of them, and eventually we decided it was getting too expensive."

He said the Windows switchover, which will take 18 to 24 months, will eliminate the single-point-of-failure problem his firm has experienced with the Sun environment.

Another convert to Windows 2000 is Merrill Lynch, which is rolling out Windows 2000 operating systems and servers at more than 700 branch locations. However, Merrill Lynch Chief Technology Officer John McKinley says the company uses 3,200 Sun servers to support Web applications and as workstations and servers for trading floors.

"There is tremendous software already developed to support Wall Street firms for the Sun platforms," he said. "We see a fair amount of third-party software development for the Microsoft platform, but it still doesn't have the software developer market share in the capital markets arena."

Other attendees said they were skeptical about upgrading to Windows 2000 from Windows NT or about switching from the Sun platform.

"It was 1997 before we switched to Windows 95," said one information technology professional at a major New York bank. "It was last year before we went to Windows NT. We want to see someone else find all the bugs first."

WinHEC Attendees Hear Whistler Plans

A 'fairly minor upgrade' of Windows 2000

BY DOMINIQUE DECKMYN
NEW ORLEANS

Microsoft Corp. last week outlined key features of the next version of Windows 2000, code-named Whistler, calling it "a fairly minor upgrade." Whistler is scheduled for release in the second half of next year, and, consequently, most Windows NT servers will end up skipping Windows 2000 and going directly to Whistler, according to a Gartner Group Inc. analyst.

At last week's annual Windows Hardware Engineering Conference (WinHEC) here, several sessions focused on Whistler, which will be the successor to both Windows 2000 for business users and Windows Me (the consumer Windows version due later this year) for home users.

Carl Stork, general manager of the Windows Hardware Strategy Group, said that for business users, Whistler "will probably be a fairly minor upgrade" — even though it's scheduled to ship almost two years after the initial release of Windows 2000.

Gartner analyst Tom Bitman, speaking at the research firm's "Windows 2000 in the Enterprise" conference in San Francisco last week, said that at least 70% of the NT Server installed base will skip Windows 2000 Release 1, and most of them will move directly to Whistler.

Several attendees at the Gartner conference offered evidence to confirm that prediction. Steve Huffman, CIO at Phelps Dodge Corp., a Phoenix-based copper mining company, said the company will probably roll out some Windows 2000 servers this year. But, because a large-scale server rollout isn't expected until next year, it's likely to be with Whistler, not Windows 2000, merely because of the timing, he said.

Domenick Branciforte, corporate technology manager at insurance company Royal & SunAlliance USA in Charlotte, N.C., said his company is now in the proof-of-concept phase for Windows 2000. "When [the rollout is] going to be full-blown, it will be [Whistler]," he said.

Microsoft also confirmed that 64-bit Windows will be part of the Windows 2000 product family and will ship along with the first Itanium systems later this year.

What's New?

Whistler won't be a significant change from Windows 2000:

WHISTLER PROFESSIONAL:
- New interface tweaks
- Internet Explorer 5.5
- Personal Terminal Server
- More automated rollout and management tools

WHISTLER SERVER:
- Hooks in to operating system for remote control
- Self-configuring and self-healing capability
- "Headless" operation with no keyboard or monitor attached
- Four-node clustering on Advanced Server

Microsoft Pulls Embedded OSes Into One Business Unit

BY DOMINIQUE DECKMYN
NEW ORLEANS

At its Windows Hardware Engineering Conference (WinHEC) here last week, Microsoft Corp. said its operating systems for the embedded market, which include Windows CE, Windows NT Embedded and the forthcoming Windows 2000 Server Appliance Kit, are being combined into a single business unit.

Called the Embedded and Appliance Platforms Group, the new unit will be headed by Bill Veghte, a vice president at Microsoft. It will be part of the software vendor's Platform Group, which is jointly headed by Jim Allchin and Paul Maritz.

Veghte said the group will concentrate on one part of the embedded market: 32-bit systems or higher that require connectivity and adaptable software. The technology will be delivered to other Microsoft divisions such as the Consumer Group, which develops the Pocket PC, as well as to hardware manufacturers.

A Good Idea

WinHEC attendee Tom Scherger, a senior software engineer at Intermec Technologies Corp. in Everett, Wash., said he likes the idea of a single embedded unit at Microsoft.

"They've realigned all the embedded operating systems under one group, and that will make a huge difference," said Scherger, adding that he expects the move to lead to "less confusion" about how each operating system is positioned. Intermec makes Windows CE-based handhelds for various vertical markets.

Veghte acknowledged that there has been some overlap among Microsoft's three embedded platforms. But Windows CE will be aimed at client devices and at non-Intel Corp. processor architectures, he said.

Windows NT Embedded, which is based on NT 4.0, will be aimed at uses in which developers want increased control over what functionality to include in the operating system, Veghte said.

The Windows 2000 Server Appliance Kit, while positioned similarly to Windows NT Embedded, will be less configurable but more robust because it's based on the Windows 2000 base code.

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BRIEFS

Xerox, Microsoft In Net Joint Venture

Microsoft Corp. and Xerox Corp. last week announced a joint partnership in an e-commerce spin-off, ContentGuard Inc., which will design software to protect digital documents, books, music, entertainment and other media. ContentGuard will be based in McLean, Va., and have about 40 employees. Mike Miron, former president of the Xerox Internet business group, will leave Stamford, Conn.-based Xerox to become co-chairman and CEO of the spin-off. Dick Brass, Microsoft's vice president for technology development, will serve as co-chairman while continuing to hold his job at Microsoft.

U.K. Spectrum Bidding War Ends at $35B

The U.K.'s spectrum auction for next-generation wireless applications ended last week, with winning bids totaling $35.4 billion. Industry analysts said that staggering sum has "enormous" implications for similar auctions in the U.S. Comparable bidding in a country the size of the U.S. would amount to $600 billion.

FedEx's Ground Unit Names New CIO

FedEx Ground Inc., a $1.9 billion subsidiary of Memphis-based Federal Express Corp. that delivers small packages to businesses via ground shipments, last week named Michael V. Hmel as its CIO. Hmel, former vice president of information technology at FedEx Ground, is responsible for coordinating all IT services at the Pittsburgh-based unit.

Short Takes

COMPUTER ASSOCIATES INTERNATIONAL INC. CEO Charles Wang and President and Chief Operating Officer Sanjay Kumar will buy the New York Islanders for $175 million, pending approval by the NATIONAL HOCKEY LEAGUE'S BOARD OF GOVERNORS. . . . New York-based Internet firm HOTJOBS.COM LTD. and Sunnyvale, Calif.-based software developer RESUMIX INC. agreed to merge last week.

Health Care Moving Sites Beyond Brochureware

Most firms turn to Web for marketing and recruiting, but physician, patient use rising

BY JULAKHA DASH

MOST health care organizations use their Web sites primarily for promotion or recruiting purposes, according to a recent survey, yet some are adding additional functions, such as interactivity between doctors and patients (see chart).

But these types of transformations come at a hefty cost. Most health care providers will have to spend between $250,000 and $1 million to create a Web site that goes beyond "brochureware," according to Briggs Pille, a vice president at First Consulting Group Inc. in Long Beach, Calif.

In addition, many health care providers will need to upgrade their networks, because their current infrastructures can't handle serious traffic, said Simmi Singh, a vice president at SeraNova Inc., an Edison, N.J.-based consultancy.

Network upgrades will be the "single most universal investment that health care institutions will make" this year, she said.

Upgrades Galore

Indeed, more than 40% of the 800 health care executives responding to the Healthcare Information and Management Systems Society (HIMSS) survey said they plan to upgrade their network infrastructures during the next 12 months.

In addition to money and technology, health care providers need to enlist the support of both physicians and patients to develop a successful Web strategy, according to Steve Flammini, director of application development at Partners HealthCare System Inc., a Boston-based network of hospitals and practitioners.

"It's important that this approach not be primarily driven by the IT organization. In order to succeed, you need to have M.D.'s influencing design of the [Web] system," he said.

Partners has about a dozen licensed physicians with some IT expertise who have helped the organization develop its Web strategy. That strategy includes a physician Web portal that provides clinical applications, patient education materials, collaboration tools and access to doctors affiliated with the health care network, said Flammini. Approximately 1,000 physicians should have access to the portal within the next year.

To handle high-volume transactions, Partners stores its Web-enabled clinical applications in a multidimensional database, called Cache, from InterSystems Corp. in Cambridge, Mass.

Partners plans to conduct focus groups with patients over the next few weeks to get feedback on a Web site the organization designed for them. Currently in beta, the site will allow patients to refill prescriptions, ask physicians clinical questions and receive reference materials.

The portal, said Flammini, is intended to enable patients to perform ordinary tasks at home "rather than drive into Boston, find parking and wait in line for two hours."

Who's Using What

How health care organizations use their Web sites:

Promotion and marketing	91%
Employee recruitment	71%
Communicating with physicians	60%
Consumer health information	58%
Online physician/provider directories	57%

Base: 800 health care executives

SOURCE: 11TH ANNUAL HIMSS LEADERSHIP SURVEY, SPONSORED BY IBM

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Continued from page 1

Wireless

anywhere, anyplace" strategy since it launched its wireless Web service earlier this year.

Napier said he envisions a future in which consumers will find a title they want in a bookstore, turn on their cellular phones, zip to the Amazon Web site, punch in the book's ISBN code, find a lower price, order the book and then leave the store.

Alan Reiter, an analyst and president of Wireless Internet & Mobile Computing in Chevy Chase, Md., said Web-enabled cell phones "will change the face of retailing" because customers will be able to obtain instant access to product reviews and comparisons.

Retail Will Carry On

But Ken Dulaney, an analyst at Gartner Group Inc. in Stamford, Conn., said he doesn't believe wireless e-commerce will affect traditional retailers to any revolutionary degree. By 2003, Dulaney said, it's likely that only 10 million of the 70 million users of Web-enabled phones in the U.S. will be conducting wireless e-commerce transactions.

Dulaney said that while wireless comparison shopping "will probably make some retailers angry, it's not going to rescue profitless dot-coms from obsolescence."

Yet some vendors are betting that customers will gravitate to wireless comparison shopping as more services spring up. Sprint PCS Group in Kansas City, Mo., launched a wireless comparison-shopping service, called E-compare, in February. BarPoint.com Inc. in Fort Lauderdale, Fla., has spent the past year amassing a database of millions of universal product codes that will allow consumers to type — and, soon, to scan — codes into their cell phones and then make a comparison on the company's Web site.

The company "does not want to necessarily help the customer bypass the retailer," said Jim Sass, BarPoint's executive vice president.

"We could help the retailer make the sale by providing it with a more informed customer, because we offer product reviews as well as prices," said Sass. And, indeed, some retailers said they don't feel threatened by the advent of these services.

A spokesman for Best Buy Co. in Eden Prairie, Minn., said his company has always had savvy customers. He said wireless comparison shopping is similar to "customers coming into our store with a newspaper insert from one of our competitors."

Mark Stanley, senior vice president for strategic development at Tandy, said the company "likes people coming into [our] Radio Shack stores with a cell phone, because that gives us a chance to sell them a new one." Stanley added that Tandy doesn't intend to ignore the wired or wireless Web and has formed a partnership with Microsoft Corp. to offer its products through the latter company's wireless Web service.

Stanley said retailers that offer service and expertise will do well in selling to wireless shoppers who want more than the lowest price. But, he added, big-box retailers that compete on price with the dot-coms "are at risk. . . . They're going to have a lot of competition."

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Continued from page 1

EDI

cause they are either expanding the number of their EDI trading partners, increasing the ANSI X.12 transaction types they use or bringing smaller suppliers into the fold through Web-based forms that are cheaper to use.

"I think EDI is here to stay," said Michael Goodwin, lead EDI analyst at Bank of America Corp.'s commercial finance division in Tucker, Ga. He noted that his group saw electronic invoices soar from 66% to 94% of the total during the past two years, as more trading partners ramped up.

Power-generating companies such as Allegheny Energy Inc. have no choice but to increase their EDI partnerships in their new deregulated world.

"Each state is requiring that EDI be the medium to support the data," said George Bialon, an e-commerce analyst at Allegheny Energy in Greensburg, Pa. He said his department has had to double its EDI staff in response.

Similar mandates due to take effect in the health care industry are also driving companies' increased EDI usage, industry analysts noted.

Even some software vendors that promote the XML content-tagging language have seen recent EDI benefits. IBM, for example, claims to have slashed paper invoices by 90% after linking up with more than 12,000 smaller suppliers using Web-based EDI. Small companies have typically re-

sisted traditional EDI because of the expense involved in setting up a system. Now, they simply need a PC, a Web browser and an Internet connection to access and fill out forms that are translated into IBM's EDI system.

While EDI volume may not be increasing at a rate of 30% per year as it did in the early 1990s, it's rising at a "healthy" 15% clip, said Daniel Ferguson, a vice president at Faulkner & Gray's Electronic Commerce Research Group in Chicago. Each year, his company surveys 1,500 to 2,000 customers of large EDI vendors to give the vendors an indication of the market potential.

"Volume is growing despite all the hype that Internet people put out, and it will continue to grow robustly over the next three to seven years because companies are still saving tremendous amounts of money using EDI," Ferguson said.

Cambridge, Mass.-based Giga Information Group Inc. predicts that the value of EDI transactions will soar to $4 trillion in 2003, up from about $3 trillion at the end of last year.

"EDI is a lot more extensive than people have realized," said Giga analyst Ken Vollmer. "There's a definite dichotomy between popular press and what's going on in the real world. If it's not new and sexy, no one wants to talk about it. But for people in the [EDI] trenches, I don't think we're going to be able to pry them away from it."

Changes Happen

That's not to say that EDI hasn't undergone several transformations. For instance, many companies have shifted the transport mechanism from more expensive private networks to the Internet, analysts noted. But at the back end, the story remains the same. Companies that have gone to great trouble to make sure EDI data flows into their applications aren't in any hurry to change the system.

"Until there's an off-the-shelf solution that self-integrates with any application, it's going to be hard to just dump EDI," said Dave Oppenheim, director of e-commerce at Cessna Aircraft Co. in Wichita, Kan. Oppenheim noted that his company is getting "much deeper" into EDI, adding a shipment and billing notice, remittance advice and electronic fund transfers to its transaction roster.

While XML holds promise with its more flexible, humanly readable data format, many EDI users said they're content to wait until XML standards are nailed down before implementing any changes. Right now, many are just exploring the new options.

"XML sounds simple, but the fact remains that someone has to do the mapping and integration work," Oppenheim said.

"Why jump?" said Carol Farrar, an EDI analyst at Smurfit-Stone Container Corp. in Alton, Ill. "It's too costly for a large company to do that. We'll wait for the standards to come out. We're not going to be the beta."

Continued from page 1

Exchanges

form — or that Bentonville, Ark.-based Wal-Mart Stores Inc., the world's biggest retailer, is conspicuously absent. The exchange, whose members do include Kmart Corp. in Troy, Mich., and Target Corp. in Minneapolis, was announced March 31.

Or take PlasticsNet.com, which with just over $1 million in revenue in 1999 — much of it from advertising — is ranked as the leading independent Web-based exchange in the plastics industry. Yet some of the industry's largest players, notably $7 billion GE Plastics in Pittsfield, Mass., are nowhere to be found in the electronic marketplace.

A reality check seems to be in order.

Analysts estimate that as many as 1,000 Internet exchanges had been announced or launched by the end of last year. The exchanges' promise is largely the same across all the industries they cover: to cut costs and create supply-chain efficiencies by bringing together buyers and sellers.

In addition, these Internet marketplaces plan to offer a wide range of value-added services to their participants, such as shipping and demand planning and logistics, all in a seamless electronic environment.

But despite the hype, less than 15% of exchanges are actually delivering value-added services or end-to-end electronic transactions, according to Bruce Klassen, a vice president at New York-based A. T. Kearney Inc., which recently conducted a study of 85 exchanges serving 10 industries.

"Exchanges are still in their infancy," said Carl Lenz, an analyst at Gartner Group Inc. in Stamford, Conn. "They're primarily a third-party mechanism to push purchase orders, and that's it for now."

Lenz predicted that it will be at least another 18 to 24 months before electronic markets begin to deliver value-added services, "and that's being pretty positive," he added.

GE PLASTICS' GERRY PODESTA: "We have no intention of turning over our connection to our customers to a third party"

Of the 600 independent exchanges tracked by Boston-based AMR Research Inc., "only two or three have strong support for supply-chain integration," said AMR analyst Scott Latham.

To survive a widely expected cross-industry shakeout over the next several years, the vast majority of exchanges are instead preoccupied with building what's known in business-to-business jargon as "liquidity" — a critical mass of buyers and sellers — analysts said.

But the going is slow. Cambridge, Mass.-based Forrester Research Inc. estimates that only about 1% of business-to-business trade will be conducted through online marketplaces this year. A separate Forrester survey of 80 executives at large U.S. companies also found that 77% had yet to execute a single transaction through an online exchange.

Meanwhile, there's a growing trend among companies — particularly suppliers — to spurn industry marketplaces in favor of conducting business through their own private exchanges.

"Those companies don't want to pay a commission for the privilege of selling," or they're reluctant to share planning and inventory information on a public exchange, noted Latham.

They also want to remain close to their customers.

"We have no intention of turning over our connection to our customers to a third party, which is how we would view any exchange," said Gerry Podesta, general manager of electronic business at GE Plastics.

This year, said Podesta, GE Plastics expects to transact $1 billion in sales over its own GE Polymerland exchange.

Another company that has turned its back on exchanges is Wilson Supply, a $3.5 billion oil-industry equipment and services company in Houston.

Mark Chellis, Wilson's vice president of online business and marketing, said several oil industry exchanges have approached him. But so far, none has been able to come close to providing the value-added services that Wilson already provides directly to its business customers, including 200 distribution locations, next-day delivery of goods and free order and sales summary reports.

Like Podesta, Chellis said he has a difficult time seeing the value of paying a third party to insert itself between Wilson and its customers.

Jerry Storch, president of financial services and new businesses at Target and a founding member of the WorldWide Retail Exchange, said such skepticism is premature in the business-to-business arena.

He noted that the founding 14 companies involved in the retail industry effort are pouring massive financial and professional resources into the exchange, though he declined to quantify those investments.

The WorldWide Retail Exchange "is just starting. It doesn't mean it's not going to happen," he said.

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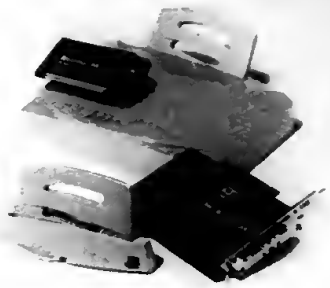

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Tool Extracts Data From SAP Systems

E-Caches software offers Web customers speedy delivery of subject-specific data

BY JULIA KING

JUST THE FACTS are what most business-to-business e-commerce customers want from companies' Web sites. Requests are usually very specific, such as when and how an order was shipped or how much a company owes on its account.

At Albemarle Corp., a $900 million, Richmond, Va.-based chemicals manufacturer, all this data — plus a lot more — is available in a back-end SAP AG R/3 computer system. The challenge lies in extracting and presenting precisely the information Web-based business customers want, without unleashing a data deluge.

To do that, Albemarle is installing new software from Mountain View, Calif.-based Acta Technology Inc., whose e-Caches software just became generally available.

So far, nine companies — all SAP users looking to launch or expand their electronic business operations — have bought the Acta software, which is being sold to Web-based customers as a way to quickly deliver back-office data in specific subject areas.

"Going directly into SAP, you have to look at a lot of information," and the R/3 software wasn't meant to handle frequent online requests, said John McChesney, Albemarle's manager of customer electronic-business initiatives. "With Acta, we get information from SAP in a convenient way."

E-Caches software is essentially a group of packaged databases that link companies' front-end e-commerce systems with back-end SAP systems, which weren't designed to handle frequent real-time data requests, said Acta CEO Carol Mills Baldwin.

Back-office systems, by and large, do what they were meant to do extremely well, but they were not meant to handle frequent requests for the heavy real-time and historical data that businesses need to complete B-to-B transactions," Mills Baldwin said.

"It's fair to say that the [R/3] architecture wasn't designed to handle large Web requests, but we've been providing Internet software for three or four years," said Jon Wursl, SAP's customer relationship management evangelist. Specifically, he said, MySap.com is SAP's Internet business framework and was designed to handle online requests.

Greater Value

McChesney said Albemarle had considered SAP's electronic-business software, including MySap.com, but "we saw Acta being more valuable to us."

So did Jesse Rocha, an information manager at The Westlake Group, a privately held chemicals manufacturer in Houston.

One reason Westlake chose Acta is that the Acta software can extract and present data from Westlake's legacy systems which contain certain rail shipping data that Web-based customers need, in addition to SAP-based data.

Security is another reason.

"On the business-to-business side, we don't want anyone hitting our [SAP] database directly," Rocha said. "With Acta, we put e-Caches outside of the firewall but only with the information we want to release. We don't worry about customers going into other areas. And [we installed e-Caches] not just for security reasons. We also don't want [customers] bogging down the servers," he said.

GAO Criticizes Tech Funding

BY PATRICK THIBODEAU

A government program intended to fund financially risky research-and-development projects, including information technology projects, at private companies is coming under attack in Congress for duplicating privately funded research.

House Science Committee Chairman F. James Sensenbrenner (R-Wis.) last week released a report by the U.S. General Accounting Office that looked at three Advanced Technology Program (ATP) projects. The GAO report found that all three projects, including one to develop handwriting-recognition systems and another to increase the capacity of fiber-optic lines, were also being conducted by private companies.

"The federal government should not use its R&D budget to compete with or replicate the private sector," Sensenbrenner said in a statement.

But officials of the ATP said the GAO's research was flawed. Government investigators "handpicked" three completed projects, "presumably with the intent of making the strongest possible argument, and [drew] conclusions that are unreasonably far-reaching," said Raymond Kammer, director of the research program, in a letter to the GAO.

The ATP, which is run by the National Institute of Standards and Technology, is intended to accelerate the development of high-risk technologies — projects that may have trouble getting private funding because of fears of financial failure. Since 1990, it has funded 468 projects costing $1.5 billion in federal matching funds and has completed 199 of them.

In its report, the GAO said it was difficult for the government to avoid duplicating the private sector because private-sector companies, for proprietary reasons, may not disclose what they are working on.

British Airways to Outsource Core Systems

Deal to provide reservations link

BY MICHAEL MEEHAN

British Airways PLC has struck a 10-year deal under which Amadeus Global Travel Distribution will operate and develop its reservation, inventory and departure control systems.

Amadeus has built a Madrid-based reservation system through which 110 competing airlines can use the same platform as Amadeus-linked travel agencies. The deal will give British Airways a seamless reservations link with other members of the Oneworld alliance of airlines, such as Iberia, Finnair Oyj and LanChile SA, the companies said.

"This partnership should enable us to operate core commercial systems more cost-effectively and improve time to market, delivering better functionality faster and cheaper," said Bryan Wilson, director of information management at British Airways.

Growing Trend

Jeffrey Osborn, a transportation industry consultant at Science Applications International Corp. in Peachtree City, Ga., said the deal reflects a growing trend in the airline industry.

"Airline executives are saying, 'My core business is flying airlines and moving people,'" Osborn said. "It's not a telecom business."

Amadeus will set up a site for British Airways near London's Heathrow Airport to support its architecture and develop a new generation of inventory and departure control systems. The current British Airways transaction-processing facility team will be incorporated into the Amadeus group to help develop those technologies.

IT Support

Osborn pointed to American Airlines' spin-off of Sabre Inc., Deutsche Lufthansa AG's information technology deal with Deutsche Telekom AG and Delta Air Lines Inc.'s wireless broadband support deal with San Francisco-based SoftNet Systems Inc. as examples of air carriers drawing a line between air travel and IT functions.

"As old as these airline systems are, a lot of their IT guys are just trying to keep their heads above the water and doing yeoman work just to stay at that level," Osborn said. "Providing those core IT services is literally an all-encompassing, all-occupying event. It makes a lot of sense to have someone else handle that stuff for you."

Amadeus was formed in 1987 out of an alliance among four airlines, including Deutsche Lufthansa and Air France. Its global distribution system puts users on the same pricing and passenger records platform.

TWA Site Revamp

St. Louis-based Trans World Airlines Inc. (TWA) last week announced a deal with GetThere.com Inc. in Menlo Park, Calif., to revamp the air carrier's Web site.

Set for a summer relaunch, the new TWA home page will plug into GetThere's data center, allowing travelers who are buying airline tickets to also book their hotels and rental cars without having to surf to another Web site.

Keith Bounds, vice president for distribution at TWA, said the airline wants to offer "an easy-to-use booking capability that allows travelers to book virtually every aspect of a trip" via the Internet.

The GetThere system is also used by United Air Lines Inc., Alitalia, Northwest Airlines Inc. and All Nippon Airways. Other users of the system include AmericanExpress.com and Trip.com.

The TWA site will also allow frequent fliers of the airline to redeem their miles online.

– *Michael Meehan*

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Andersen, Sun and iPlanet Set Up Procurement Venture

New online firm will buy up to $300M of hardware, software and services

BY LINDA ROSENCRANCE

ANDERSEN Consulting in Chicago last week announced that it is teaming up with Sun Microsystems Inc. and iPlanet E-Commerce Solutions to form an Internet-based procurement venture.

The new company, which is slated to be operational in the fall but has yet to be named, will seek to provide corporate users with electronic purchasing services.

The venture already has committed to purchase $300 million worth of hardware and services from Sun, along with e-commerce applications and infrastructure technology developed by iPlanet, a joint venture between Sun and Netscape Communications Corp.

The announcement comes two months after The Chase Manhattan Bank and Deloitte Consulting, both in New York, said they planned to launch a similar procurement services company this spring.

An Andersen spokesman said the new company will differ from competitors in that it will not only provide an Internet-enabled link between customers and their suppliers, but also outsource the purchasing functions from the customers.

Purchasing Savings Promised

"The venture will deliver savings opportunities estimated to cut 8% to 12% from a client's current total costs of indirect purchases," the spokesman said, referring to purchases of goods and services from companies other than the three founders participating in the marketplace.

Andersen's AC Venture unit has made a majority equity investment in the electronic-procurement firm, and Sun has taken a minority stake, the companies said in a statement. They didn't release any further details of the investments.

Industries to be targeted by the venture include automotive, financial services, telecommunications, chemicals and food services. Participating companies will be able to purchase such goods and services as office supplies, computer equipment, airline tickets and entertainment.

The venture is planning to attract more than $200 billion worth of indirect procurement by 2004. Andersen and Sun said companies worldwide have already committed to spend $20 billion through the online marketplace.

Erica Rugullies, an analyst at Giga Information Group Inc. in Cambridge, Mass., said Andersen is trying to establish itself in the burgeoning electronic services market and at the same time get an equity stake in a new dot-com business. For Sun and iPlanet, Rugullies said, the online procurement company will provide a broader sales channel for their products. And, like Andersen, Sun will get some coveted dot-com equity, she said.

But Laurie Orlov, an analyst at Forrester Research Inc. in Cambridge, said she isn't impressed by the venture.

"Andersen is coming late to the game," Orlov said. "This is a complete copycat and me-too offering, like the partnering of Deloitte and Chase Manhattan. There is nothing unique here."

Orlov noted that it will be interesting to see how the venture dovetails with the announcement Andersen made in March that it is teaming up with Microsoft Corp. to develop e-commerce systems running on Windows 2000.

"It's impractical to partner with everyone," Orlov said. "Andersen is going to have a tightrope to walk."

AT A GLANCE

Three Amigos

The companies forming the joint online procurement company say it will:

- Serve industries including automotive, financial services, telecommunications chemical and food service
- Allow businesses to purchase indirect goods and services such as office supplies computer equipment and airline tickets
- Save customers money

EMC Expands and Upgrades Enterprise Storage Offerings

Symmetrix aided by IBM's Shark delays

BY SAMI LAIS AND KATHLEEN OHLSON

Enterprise storage managers and industry analysts greeted EMC Corp.'s next-generation product announcements last week with tempered approval.

Mike Ruettgers, CEO, and Jim Rothnie, senior vice president of product management, crowed about EMC's hold on the enterprise storage market with its Symmetrix product.

They also said their company is extending its lead because of IBM's recent announcement of delays delivering functionality on its competing Shark product.

"IBM's stumbles with its feature set allows EMC to capture even more of the market," said Randy Kerns, a partner at Evaluator Group Inc. in Englewood, Colo.

The new Symmetrix 8000 box doubles to 19.1 terabytes the capacity of previous storage-area network devices from Hopkinton, Mass.-based EMC. The 8000 runs up to four times faster on all PowerPC processors as measured by its own benchmarks, EMC claimed.

"These are forklift upgrades," said John Webster, an analyst at Illuminata Inc. in Nashua, N.H.

"The doubled capacity and performance are interesting, but not breathtaking," said Bob Zimmerman, an analyst at Giga Information Group Inc. in Santa Clara, Calif.

Symmetrix user Rich Ward, who is associate vice president of systems support at Keystone Mercy Health Plan in Philadelphia, said he is pleased with the increased capacity of the 8000.

"The fact [that EMC] extended the life of these frames makes it easier to manage" and adds more flexibility, Ward said.

The Symmetrix 8000 is the product that EMC was rumored to be delivering to some customers, said Kerns. However, its release is a little later than expected — EMC had promised it in last year's third quarter, Zimmerman said.

In other announcements:

- The Symmetrix operating environment, MicroCode, renamed Enginuity, has been updated and engineered to facilitate development of third-party applications, EMC said. Enginuity has what Webster called "a few midlife kickers."
- The new TimeFinder 4.1 software simultaneously supports up to eight production data versions online, and Symmetrix Remote Data Facility remote backup and restore tool operates over Fibre Channel. Both are backward-compatible with Symmetrix 5.
- The Clariion midrange line from Data General Corp. in Westboro, Mass., which EMC bought last year, has been integrated into the EMC line as the new Clariion FC4500. The FC4500 connects to the SAN via EMC's Connectrix Fibre Channel switch.

One storage consultant suggested that EMC may be seeing losses in the DG installed base because of less expensive products from Xiotech Corp. in Eden Prairie, Minn., and MTI Technology Corp. in Anaheim, Calif. He said he recommends that clients use products from multiple vendors, partly to encourage EMC to negotiate on price.

AT A GLANCE

What's New In Storage

New products announced by EMC last week:

Symmetrix 8000

- Enginuity operating environment
- Runs on PowerPC processors
- 19.1 TB capacity

Clariion FC4500

- Centralized management via EMC ControlCenter framework software
- Software-protected from I/O failure
- Multihost connectivity

New System Blamed in Loss

BY JULIA KING

Problems with a new Internet-based order-management system continue to haunt Thomas & Betts Corp. The Memphis-based electrical company said it incurred more than $6 million in additional freight, distribution and customer service costs because of system issues during the first quarter of its current fiscal year.

"In light of the difficulties we faced in managing the transition of our new systems, I'm pleased that we met our earnings target for the quarter," said Clyde R. Moore, president and CEO of the company.

Thomas & Betts' systems-related financial problems first surfaced in February, when the company blamed its new Internet-based order-management system for a 50% nosedive in profits for the fourth quarter plus another $42 million in lost business caused by ordering and shipping disruptions. The system comprises software applications for processing and fulfilling orders.

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Watchdogs Want FCC to Nix AOL/Time Warner Merger

BY LINDA ROSENCRANCE

Four leading consumer groups last week presented a 115-page petition asking the Federal Communications Commission (FCC) to reject America Online Inc.'s bid to acquire Time Warner Inc.

The groups — led by Consumers Union of the United States Inc., the Yonkers, N.Y.-based publisher of *Consumer Reports* magazine — said the deal would harm consumers.

"The merger would allow AOL/Time Warner to so dominate the market for Internet service and cable television that consumers could be left with higher prices and fewer choices and limited competition," said Consumers Union spokesman David Butler.

The other groups joining the petition are the Center for Media Education, the Consumer Federation of America and the Media Access Project.

Two Internet service providers have also called on the FCC to require open access to AOL's Instant Messenger (IM), a private online chat service. IM is designed to communicate only with other IM users.

Woburn, Mass.-based iCast Corp. and Denver-based Tribal Voice last week filed papers with the FCC alleging that the AOL/Time Warner merger would hurt instant messaging users by expanding AOL's dominance of that market.

The firms accused Dulles, Va.-based AOL of not living up to its commitment to support open Internet communication.

Broadband Monopoly Feared

The $350 billion, all-stock AOL/Time Warner deal — which requires FCC approval — would give AOL, the world's largest online access company, a new broadband distribution platform for its services, as well as new subscribers through New York-based Time Warner's media outlets.

Butler said the consumer groups are concerned that if the FCC approves AT&T Corp.'s pending acquisition of cable company MediaOne Group Inc. — which owns a 25.5% stake in Time Warner Entertainment Co. — then AT&T and AOL/Time Warner would control more than half of the cable in the country. Butler said that would violate last year's FCC ruling that prohibits a single company from serving more than 30% of U.S. households equipped with cable or satellite television.

Butler said that AOL, once an advocate for open access to the broadband Internet, has shifted its stance. AOL previously claimed that the only way to guarantee open access was through government regulation, but it has reversed its position since the merger was announced, said Butler.

The FCC's deadline for public comments on the merger was last Wednesday. AOL did not return phone calls.

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InfoImage, Microsoft Partner on Portal Track

Freedom portal showcases Microsoft's Digital Dashboard, Exchange platform

BY LEE COPELAND

PHOENIX-BASED InfoImage Inc. hopes that cozying up to Microsoft Corp. will seal its transition from service provider to corporate portal vendor.

Last week, InfoImage announced Version 2 of its Freedom corporate portal offering. The Web-based product is available in two editions: B2B Decision Server and B2E Decision Server. Both allow users to collaborate via the Web or a corporate intranet to extract structured data from back-end systems and unstructured data from the Web and productivity applications.

The B2B version features enhanced security and access controls, while the B2E product, targeted at internal employees, is optimized for an intranet setting and Microsoft's Internet Explorer, Outlook and Digital Dashboard applications.

Gene Phifer, an analyst at Gartner Group Inc. in Stamford, Conn., said close ties to Microsoft helped InfoImage gain credibility in the corporate portal market but may hinder the company from selling to firms with Unix computing environments.

"The partnership is an enabler on one hand because of the underlying architecture that Microsoft provides in the operating platform," Phifer said. "On the other hand, independent of arguments about [Windows] NT's scalability and reliability ... some clients just want Unix. And by playing in an NT-only world, they cannot supply to those clients."

A former top-selling systems integrator in the collaboration space and a longtime Lotus Notes partisan, InfoImage entered the portal market a year ago — encroaching on a space chock-full of competitors such as Viador Inc. in Mountain View, Calif. and Plumtree Software Inc. in San Francisco.

By October, InfoImage had unveiled a partnership that drew an equity investment from Microsoft of about $10 million. The deal called for InfoImage to develop exclusively on Microsoft's platforms and to showcase Digital Dashboard.

Digital Dashboard, a key component of Microsoft's desktop knowledge-management initiative, offers a consolidated view into various knowledge sources.

InfoImage officials said the first version of Freedom was optimized for the Lotus Notes messaging system. With the release of Freedom 2, InfoImage did a complete about-face, because the new version is optimized for Microsoft's Exchange platform and Digital Dashboard.

Hadley Reynolds, an analyst at Delphi Group Ltd. in Boston, said one of Freedom's strong points is its ability to extract transactional data from back-end systems.

"Each portal vendor faces the challenge of integrating the layer between the sources of information and the user's experience on the browser," said Reynolds. "InfoImage has done a good job of orchestrating that integration because of their systems integration background with the [enterprise resource vendors]."

AT A GLANCE

InfoImage's Freedom 2

Key features:

Peripheral Vision - Captures name, role, skills and interests of end users

Collaboration Manager - Shares content, solicits input from other users

Knowledge Maps - Categorize data using graphical tools

Compaq Better Off, but Questions Remain

Wildfire sales could be 2000's high point

BY MATT HAMBLEN

Things are better than they were last year, but Compaq Computer Corp. still faces an iffy 2000, based on its flat first-quarter earnings report and ongoing practices, analysts and users said.

Officials at Compaq last week said they expect to see 10% to 12% revenue growth this year. But that performance is less than the 15% to 20% growth needed to beat aggressive competitors such as IBM, Hewlett-Packard Co. and Dell Computer Corp., analysts said.

Compaq said revenue grew by 1% in the first quarter, compared with the same period last year. So the company "will really need to kick ass for the rest of the year to make that [12% revenue growth] number," said Charles Wolf, an analyst at Warburg Dillon Read LLC in New York.

"Compaq is still a strong vendor, but I wonder what's the next step for them," said Paul Kirk, senior vice president of MIS at United Companies Financial Corp. in Baton Rouge, La. Compaq isn't being aggressive enough in beating competitors on desktop and server prices, Kirk and others said.

"Our corporate directive is to buy Dell desktops, even though we used to buy a lot of Compaqs, just because the price is lower," said Kenny Ridgeway, a systems manager at Solutia Inc. in St. Louis.

Terry Shannon, editor of the newsletter "Shannon Knows Compaq" in Ashland, Mass., found the first-quarter report "pleasantly surprising," in part, because last year's was so hard.

Shannon said he was most impressed that Compaq CEO Michael Capellas reported operational expenses at $1.7 billion for the first quarter, a 7% decline from the same period a year ago and the third consecutive quarter of lower spending.

Several users and analysts said Compaq is far better off than a year ago when CEO Eckhard Pfeiffer was ousted.

When Capellas took over in July, he immediately reorganized the company and set out to cut expenses. But he is still dogged by declining PC sales to commercial customers and the complexity of integrating the high-end computers and services of Digital Equipment Corp. that Compaq purchased in 1998. The divisions devoted to enterprise customers and commercial PCs both saw revenue and income declines.

One bright spot in the report was that PC sales jumped 35% to $1.8 billion, though net income was flat at $82 million.

Compaq officials said they have 120 orders for the high-end GS AlphaServer, code-named Wildfire, that's being launched this month. Compaq is aiming for $1 billion in Wildfire sales this year, but Wolf expects only half as much.

Palm Plans to Go Wireless

BY BOB BREWIN

Palm Inc. plans to focus its entire business on the wireless Internet, a move analysts say is necessary to meet the competitive challenge of next-generation smart cell phones.

Palm's current 6 million users will be offered several wireless connection options, company executives said at a press conference, with the most common being a wired connection to a cell phone.

William Maggs, the Santa Clara, Calif.-based company's chief technology officer, said Palm plans to eventually offer wireless devices that run the Palm operating system and to provide what he called "voice-enabled solutions" with the company's cellular telephone partners, including Nokia Corp.

Elliott Hamilton, an analyst at The Strategis Group in Washington, said Palm adopted its wireless strategy to meet the challenges of next-generation cell phones, which will provide users with larger screens to access their data.

However, Hamilton added, "right now, there is no doubt a Palm is a better [data access device] than cell phones, which have small screens and tiny buttons."

SNAPSHOT

COMPANY	REVENUE	PERCENT CHANGE*	NET INCOME	PERCENT CHANGE*
BMC Software	$476.4M	23%	$123.2M	0%
BroadVision	$61.5M	232%	$10M	245%
Candisco	$1.01B	6%	$69M	68%
LSI Logic	$615M	33%	$88B	650%
Nortel Networks	$6.32B	48%	$347M	64%
PeopleSoft	$375M	7%	$11M	39%
Siemens AG	$20.6B	15%	$721M	104%
Tandy	$1.047B	18%	$67.9M	29%

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MARYFRAN JOHNSON

Collector's items

"WIRELESS DOORBELL," read the subject line, and I had to smile in anticipation. It was yet another missive from that vast community of loons flocking around the Net and sending forth what I fondly consider the finest comic relief available from that curse we call e-mail. I'm talking about weird e-mail here — genuinely strange communications from the genuinely strange (who, strangely enough, all seem to have AOL accounts).

MARYFRAN JOHNSON is editor in chief of *Computerworld*. You can contact her at maryfran_johnson@computerworld.com.

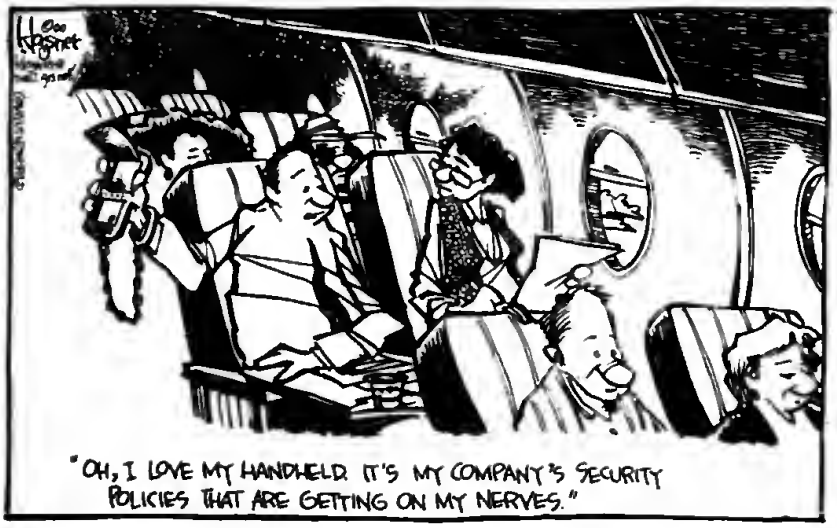
About a year ago, I started to collect the stuff, the way other people hoard rare books or Barbie dolls. It helps that I get 150 e-mail messages a day. Talk about an embarrassment of riches. We connoisseurs of crazy communiqués don't go for those come-ons from allegedly naked teen-agers or for those tacky schemes to make "Serious Money Without Ever Leaving Home!!!" To qualify for the weird e-mail collection, there are certain criteria that must be met.

First, it has to be sincere, like the regular correspondence I receive from a fellow who is secretly the president of IBM. (We're keeping it from Lou Gerstner so he won't feel threatened.) Or like my "wireless doorbell" message. This was from someone seriously seeking "a person who can program a new sound onto a chip with a Walt Disney or Looney Tunes melody." If I didn't know anyone with this capability, could I recommend a kit?

Second, the writer must be truly clueless. One favorite item in the collection came from a PR person who was inquiring about the fate of a press kit and video sent to *Computerworld* that showed an 8-year-old child "mastering the Monkey Wrench Conspiracy game." Did I plan to cover this news in an upcoming issue? Or this poor thing: "I feel like an idiot. I searched for Ben & Jerry's e-mail address and *Computerworld* came up. I just wanted to say thanks for the most delicious Pistachio Pistachio ice cream." (We do aim to please.)

Finally, it should be just a tad otherworldly. Evidence of alien transmissions from the home planet are a definite plus. Take the one from a man blaming the Y2k bug on the "X-Factor," described as "the possibility that something totally unexpected can occur or intervene, be it angels, space aliens, the Second Coming or a Global Spiritual Awakening generated by intense cognitive dissonance."

So the next time you're growling about that useless, annoying e-mail, lighten up and listen for a moment. Hear it yet? *Ding dong*. . . .



DICK HUDSON

What's in a name? With IT, er, IS, it's all about 'service'

INFORMATION TECHNOLOGY or information services? Each name conjures up a distinctly different psychological and philosophical image. Who are you? How do you view yourself? Do you see yourself as a service provider or product creator?

Should we be technologists in a "service" capacity within our enterprises' IS, and not IT, departments? Information delivery is a service to our customers, both internal and external. Moshe Rubinstein, a Fulbright Hays fellow and distinguished professor at UCLA, rightfully says we have migrated beyond the "technologist" phase of the Information Age.

DICK HUDSON is CIO at Global Marine Inc., a Houston-based offshore drilling company. Contact him at Dick.Hudson@glm.com.

He cites the electric light, telephone, automobile and mainframe computer as inventions that ushered in new eras of technology. These eras were owned by specialists of the times who smugly forecast a highly limited market for their particular technologies. How naive they were!

Each of these examples evolved from a curiosity to a useful tool to — finally — an on-demand service.

There's that word again!

Mankind has evolved through the "labor" era to the tangible capital of the Industrial Revolution to the less-tangible intellectual capital of the Information Age. IT is the least-plausible moniker to describe what we do. IS — information service — is far more accurate.

The dawning of the Information Age and the subsequent diffusion of the mainframe-based glass house to desktops, coupled with the Internet explosion, have forever altered our lot in life. We are a service industry: We provide a service to our customers. God knows we're no longer pure techies laboring under the shade trees like the auto mechanics of yore. Those days of glass-house cocooning are history. For us, the future is heading toward the marketing and sales of our rapidly changing offerings. (Marketing and sales — that's scary!) Still, unfortunately, that techie image of IT still pervades our corporate departments and outside consultants.

Fear not; you are not alone. The media, including the print media (do you hear me, *Computerworld*?), still refer to us as "IT." Gurus making

huge sums of money off us still use the identifier "IT." Can they all be wrong? Of course! After all, the world's best minds in the 16th century knew the sun revolved around the Earth.

Starting today, starting here — the time to change is now. Change is a good thing, remember? Internally, you can be a techie until the day you die, as long as you adopt a gilt-edged commitment to the service of your users and outside customers. Remember these three principles: Service, service, service.

LENNY LIEBMANN

The only real 'core competency' is growing talent

I RECENTLY INTERVIEWED an IT executive at a major brokerage firm about his company's use of application service providers. He said something I've heard over and over for years: that having an application service provider manage the server for the application we were discussing is a good idea, because systems administration isn't a "core competency" for the brokerage.

We've all come to accept this little truism over the years. Babysitting hardware doesn't add value, so why not let someone else do it? But then I got to thinking: Is writing contracts a core competency? If not, shouldn't we trash our legal departments? Is doing math a core competency? Of course not — so out with accounting! Smiling at stockholders? Ix-nay — fire the CEO!

In fact, if our only mission is to maximize return on capital, let's all just become day traders. Oops! Picking stocks isn't my core competency. I'll have to get my broker to do that for me. And I'll just, um . . . uh . . . hey! What *is* my core competency, anyway?

LENNY LIEBMANN is an independent consultant specializing in the alignment of IT resources with business goals. Contact him at lenny@lenny.com.

So does it really make sense to say that systems administration isn't a core competency and therefore can be jettisoned? I know many highly competent systems administrators personally. Some of them work at application service providers and others at dot-coms. And right now, those service providers and dot-coms are attracting lots of venture money because they're apparently going to be much more successful in the new electronic economy than their corporate customers — who are too smart and "focused" to get their hands dirty with anything as "nonstrategic" as managing servers.

Ready to buy a clue? In the world of e-commerce, *all* information technology — including infrastructure management — is inherently strategic. There may occasionally be some ostensible short-term economic logic in leveraging a service provider's capabilities. But there's no long-term competitive advantage to be had by using the same application service provider, the same managed network service provider and/or the same PC outsourcing company as everyone else.

Here's where the real problem arises: When you turn over your technology operations to someone else, you deplete your staff and sacrifice the in-house expertise that is the wellspring of all IT innovation. In attempting to reduce monthly costs, you mortgage your future — plain and simple.

I don't recall any of the big data center outsourcers going to their clients and saying, "Hey! We got a great idea! It's called a Web site, and we can come up with a demo for you over the weekend if you want." That's something only motivated, well-trained, mission-conscious IT employees do — not service providers whose sole mission is to deliver cookie-cutter, status quo technology so they can maximize their own profits.

Of course, motivating, training and retaining a great IT staff is a tough job. So if you don't want to do it, I understand totally. Just don't use pretty language about core competencies to justify complacency, short-term thinking and lack of vision.

Here's another revelation. There's actually no such thing as "skills." There are only skilled people. And people — as inconveniently human as they may be — are what make any organization a success. Leading them, nurturing them and maximizing their potential is any company's real core competency.

READERS' LETTERS

Readers aren't so soft on Microsoft

MARK HALL'S editorial "Go Soft on Bill" [News Opinion, April 10] leads me to infer that Hall has never been part of any business negotiations with Microsoft and that Microsoft has always made nice to Hall. Anyone who has ever done any business with the company quickly grasps the sheer arrogance of its corporate mentality, an attitude that Microsoft can do nothing wrong.

At best, I can imagine that this attitude blinded the company to the illegality of its business practices. But, frankly, I believe the worst: that everything done by Microsoft found illegal by Judge Jackson was premeditated. Microsoft figured it wouldn't get caught. Wrong!

Ben Myers
Spirit of Performance Inc
Harvard, Mass

METHINKS Mark Hall misses the point for a lot of us who are disappointed in Microsoft. With me, it's not that it's a monopoly; it's that it's such a crappy monopoly. Microsoft products, especially its operating systems, are just plain buggy.

As a professional programmer for 19 years, I can assure you that no boss I ever had would let me off the hook for a piece of junk like Windows 95 or Windows 98 or even NT. It's not right to reboot a computer three times a day, yet users have come to expect this mediocre performance. It's not right to have 64MB on an NT 4.0 machine and yet not be able to run more than three nontrivial apps at a time due to memory shortages.

Mark Loveless
Little Rock, Ark

ACCORDING TO David Moschella ["Everyone Comes Out a Loser in Microsoft Ruling," News Opinion, April 10], "Instead of a useful settlement, we face the likelihood of a lengthy appeals process, frivolous private lawsuits and the demonization of a great and important company. Microsoft has only itself to blame for losing so much control over its fate; but, unfortunately, the government and the public have become losers as well."

I fully disagree.

Microsoft is losing anyway. The public no longer considers Microsoft products the only option. Linux is pushing ahead, OS/2 is very much alive, BeOS becomes an option for many. Windows has never been stable and reliable enough to be taken seriously in mission-critical environments. Yet many companies settled for it because of supposed lack of options.

Martin Senftleben
Goslar, Germany
DrMartinus@gmx.net

Beware of the 'aftermath syndrome'

ONE WARNING signal that Steve Ulfelder did not mention in "Signs of Defection" [Business, April 3] was the "aftermath syndrome."

After a staff member has left, his work is normally redistributed to the remaining staff members, adding overtime hours and dissatisfaction. If the departed staff member found a very good job that met a need that had gone unfulfilled, then other dissatisfied staff members will use the same path and means in leaving.

Recruiters gain some of their best leads from previous placements.

Bruce Seaton
Kingsport, Tenn
bruceseaton@juno.com

No need to junk PCs

SCRAPPING PCs is a big industry ["Millions of Obsolete PCs Enter Waste Stream," Cover Story, April 10], but there are people like me who hunt for older computers, clean them up, load some software and offer them to people who don't want to or can't pay the price of a new computer. An old Macintosh or 486 still makes a fine machine for a student to type papers, use e-mail and even, with patience, surf the Web.

Before throwing them in the trash, e-mail me so that I or someone I know in another state can rescue them.

Michael Ford
Orange, Calif
mikeford@socal.rr.com

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

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MICHAEL COHN

Open wide for more tech-world alphabet soup

Y2K IS OVER, and I'm in deep yogurt. I'm behind. Uninformed. I'm clueless when it comes to the latest technologies.

There are about a hundred new three-letter acronyms that I don't know about — e-commerce abbreviations that dominate cocktail-party conversation but to me are just confusing consonants. There's CRM. DSL. And SCM, ASP, ISP and everybody's favorite, ERP.

I'm no stranger to abbreviations. Way back in my happier mainframe days, we had JCL, RJE and TSO. I could sling the slang with the best of them.

MICHAEL COHN works night and day at a risky Internet start-up, where he holds a whole bunch of WSOs (worthless stock options).

But today, I'm afraid to look another acronym in the face. I can't talk about ROI. I know not of IPOs. I'm struggling with this alphabet-torture and need to bone up on it — PDQ.

Worse yet, new three-letter blends show up every day. FYI, here are the hottest ones. Learn them! Say them in meetings! Put them on your résumé (at least so you can CYA)!

VRM: Vendor relationship management, or the ability to get a sales guy to respond to three requests for proposals in six months, award him no business and still soak him for two seats right behind the dugout.

CWA: Competitive Web analysis, or taking the time to evaluate the e-business strategies of other companies in your industry. My company really isn't too swift at this, but our main competitor is, since it just hired away the two guys running our electronic-procurement project.

WEA: Web-enabled applications, or the ability to take legacy systems and give them an Internet look and feel. We've struggled a bit with this over the last six months, but were finally able to roll out Phase 1: giving everyone a screen saver.

WDA: Web-disabled applications, or what we had after we got hacked to the tune of $140,000 the day we went live.

WWD: Wireless Web display, or the ability to take Web pages and reformat them for small cell-phone screens. This is the next can't-miss Internet idea, as long as you can find a way to keep those teeny-tiny banner ads from frying your eyeballs.

TDM: Text data mining, which is a quick way to gather knowledge out of gazillions of unrelated documents. For example, a law firm can now find thousands of references having anything to do with "browser privacy lawsuits" in minutes instead of days but will still charge you an exorbitant fee so it can stick another marble coffee table in the lobby.

VPT: Virtual project teams, which allow people in different locations to collaborate on the same project using cellular, text paging and sophisticated groupware technologies. We just finished a big cost accounting implementation, and our VPT enabled our programmers to work from India, our project manager to telecommute and our ERP consultant to bill most of his time from the golf course.

SCM: Supply-chain mismanagement, which is — somehow — what we wound up with after three years of supply-chain projects, $2.6 million in software and 3,100 missing ice-maker subassemblies that the system insists are somewhere between Dayton and Toledo. ▶

BILL LABERIS

Some of the myths and realities behind ASPs

HERE'S A QUICK QUIZ for you:

1) Within the next three years, the application service provider (ASP) market will grow from $350 million to:

A. $2.5 billion.
B. $4 billion.
C. $10 billion.

2) ASPs, being mostly small companies, today sell mainly to:

A. Other small companies and start-ups.
B. Midsize companies and divisions of big companies.
C. Large enterprises.

BILL LABERIS is a consultant in Holliston, Mass and former editor in chief of *Computerworld*. Contact him at billl@laberis.com.

Interestingly enough, all the answers above are possibly correct. ASPs have burst onto the IT scene with fanfare and noise that greatly exceed the companies' current impact. By most estimates, they're selling their services pretty much equally across small, midsize and large companies.

Also, there are far more of them than there is demand for their services, at least for now. But since three different research firms project as many different market growth figures (see Question 1 above), there are many questions about the future for ASPs. And the hype surrounding them has generated a few myths.

To set the record straight, I present to you my list of ASP myths and realities.

Myth: Very few IT environments are seriously considering renting applications from ASPs.

Reality: I've seen three different studies, each of which shows that from a quarter to a third of your IT brethren have already struck deals with one or more ASPs. Moreover, the general feeling among analysts is that if application performance and overall satisfaction are high with these early experiments, the rent-instead-of-buy concept could absolutely boom.

Myth: The key issue for IT in deciding whether to try ASP services is security of the application data when it resides outside the company.

Reality: It's true that security is the main issue, but for the wrong reasons. In early experiences with ASPs, security has *not* been an issue or problem, thus it is a key *perception* holding back broader deployment of rented applications. Rather, the key issue for IT should be the service-level agreement (SLA).

If you decide to contract with an ASP, make sure that everyone from the end-user representatives to the chief financial officer to the legal department carefully reviews the SLA. And make very sure that the ASP is adequately penalized (and you are adequately compensated) if service levels fall below contract levels. This assumes that the ASP also provides a bulletproof means of monitoring these service levels. Provisions for data security can be built right into the SLA as well.

Myth: The main reason for contracting with an ASP is to save money, which you'll definitely do.

Reality: You might save money; you might pay the same amount as you would if you had deployed and maintained the applications yourself. You might even pay more, though that's not likely.

But there are two compelling reasons other than cost for renting applications. First, you will free up valuable and increasingly scarce IT staff to handle more business-critical work, such as bolting those jazzy new e-commerce front ends to back-room legacy systems. Second, ASPs are very good at rapid application deployment, which is sometimes measured in weeks for certain applications and takes less than six months for most. These are the real value propositions that ASPs bring to the table.

Myth: Working with an ASP, you'll get only plain-vanilla applications, with no customization.

Reality: While the ASP "one-to-many" business model relies heavily on renting applications without customization, nearly all ASPs offer some degree of application customization. Some will even modify core code but will probably charge you more than a typical systems integrator would to do so.

Myth: ASPs are a flash in the pan.

Reality: On the contrary, I believe ASPs will become the manifold expression of the growing belief among companies that much of what we call the information system can be looked upon as a utility, just like electricity or water.

Some may view ASPs as a threat to IT's influence and power. Perhaps a better way of viewing ASPs is as groups, which you can hold accountable should they fail to deliver with predetermined reliability. Wouldn't it be nice to be in that position? ▶

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BUSINESS

FORD VS. TEXAS

A Ford Web site has sparked a feud between the carmaker and the state of Texas. The state says the site violates its law prohibiting manufacturers from selling directly to consumers. But Ford insists the site is simply an inventory tool for dealers. ▸ 40

THE BIG PICTURE

By 2003, analysts expect the number of digital camera users to quadruple, which is good news for Eframes, an online digital-photo framing business. In the meantime, Eframes.com is expanding its customer base by putting its online framing processes on related Web sites using Bowstreet software. ▸ 40

CLEARING THE AIR

Two recent reports predict that the booming online air travel industry will experience a major shakeout by 2005, with only the strongest Web sites surviving. The reports are likely to add pressure to what is already a fiercely competitive market. ▸ 42

COMMODITY DRIVE

The abundance of information on the Web has boosted the demand for databases. To meet that demand, database makers are expanding their services and support and adding built-in features that were once packaged separately. ▸ 46

LIFE AT AIRBORNE

At Airborne Express, the company's field services technologies staff keeps truckers connected while they're on the road. But IT workers manage to find time to catch views of Puget Sound from the decks of the Seattle-based company's offices. ▸ 49

ONLINE PRIVACY PROTECTIONS

The Online Protection Privacy Act is impractical and doomed to fail, writes Kevin Fogarty. Before it does, e-commerce companies should draft new rules rather than wait for privacy zealots to throw together last-minute legislation when the current law flames. ▸ 47

LOOKING BEYOND DISABILITIES

While people with physical disabilities have made strides in the workplace since the passage of the Americans With Disabilities Act, those with mental or behavioral disorders are still overlooked by employers. But advocates say people with mental disabilities represent a rich and largely untapped pool of candidates. ▸ 50

THE VALUE OF MICROPAYMENTS

In the early '90s, micropayments were supposed to be at the heart of e-commerce. But they barely register in cyberspace today. Why haven't they caught on? ▸ 62

MORE

Advice 63
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Opinion: Paul A. Strassmann.. 49

GE AIRCRAFT TAKES OFF

WHEN GE CHAIRMAN JACK WELCH DEMANDED that the whole company reinvent itself using e-commerce, its aircraft engines division was grounded. So Welch scrapped an 18-month-old failing project, put a former paratrooper in charge of the transformation and told him to "kick open doors" and "break some glass" to get it done. A few months later, the $11 billion "start-up" is a burgeoning business-to-business powerhouse.

56

Web Business Focuses On the Big Picture

Photo framing company grows by offering services on partners' sites

BY JULIA KING

WITHIN 20 minutes of his son's birth in 1997, Brian Dunham had digital photos of the newborn posted on his personal Web site. Over the next few hours, family and friends from all over the world were logging on to get a glimpse of the baby.

But what they couldn't get with the then-current VGA technology was printed photos, much less framed printed photos, for their living room mantles.

It was a light-bulb moment for Dunham, who five months ago launched Eframes.com Inc., a consumer Web site where users can upload digital photos, crop them online, try on different frames, choose one and then receive back a framed image for $12 to $40.

Now Eframes.com is going after the much bigger business-to-business market by embedding its online framing technology in other digital imaging Web sites that can sell it as a value-added service.

Sharing online capabilities is a growing trend among digital photo processing Web sites, according to Lia Schubert, an analyst at InfoTrends Research Group Inc. in Boston.

PhotoLoft.com in Campbell, Calif., for example, has partnered with about 80 community Web sites, including Backpacker.com, where backpacking enthusiasts can view and share digital photographs.

Widening the Lead

But in focusing on framing rather than on photo processing or sharing, Schubert and others said Eframes has gained a much-coveted first-mover advantage.

"It's hard to find people who own digital cameras," said Durham. "So we decided to leverage our framing engine and back-end fulfillment with people who already found people with digital cameras."

By franchising its service, it hopes to widen the lead even more, gaining much swifter access to the 4 million U.S. digital camera users who now process about 9 million images per year.

By 2003, the number of users is projected to more than quadruple to 16.4 million people processing more than 400 million images, said Steve Hoffenberg, an analyst at Lyra Research Inc. in Newtonville, Mass.

"What they're clearly finding is that selling $20 worth of merchandise to one customer at a time is very tough," said Judith Hurwitz, an analyst at Hurwitz Group Inc. in Framingham, Mass. "It's much better to create a channel where other companies can help propagate your product or service."

Eframes uses XML-based technology from Portsmouth, N.H.-based Bowstreet Software Inc. to integrate customized versions of its online framing processes into business partners' Web sites.

Using Bowstreet's Business Web Factory software tools, Eframes is able to embed into its partners' Web sites all of its processes for uploading, editing and framing photos.

In addition, it can ship finished goods and process billing for its partners. All this information is stored in templates as XML data. So far, Eframes' partners include Zing.com and Photoactive.com, both digital photo processing Web sites, and eCircles.com, a community Web site for sharing digital photographs.

Quick and Easy

One of the prime benefits of the XML templates is the speed and relative ease with which Eframes can roll out new functions to its partners.

Rather than hard-coding changes to each of the partners' Web sites, Eframes creates a new XML template and sends it to partners, who can customize it for their sites.

In addition to embedding the technology in partners' sites, Eframes also posts it to Bowstreet's Business Web Exchange, an online library of XML-based Web services that developers can download and incorporate into their own sites. Currently in beta testing, the exchange is scheduled to go live by early summer at www.businessweb.com.

Another Bowstreet user is Austin, Texas-based MoneyStar.com. The company is saving "hundreds of thousands [of dollars] in Web developer time" using Bowstreet's tools to build financial services templates, said Gary Epple, MoneyStar's chief development officer. The tools also reduce time to market.

> We decided to leverage . . . people who already found people with digital cameras.
>
> BRIAN DUNHAM, FOUNDER AND PRESIDENT, EFRAMES.COM

Ford Challenges Texas On E-Commerce Ruling

Online used-car sales are at issue

BY DEWAYNE LEHMAN

Ford Motor Co. is battling the state of Texas over the way its used cars are sold on the Internet.

In an administrative hearing last month, the Dearborn, Mich.-based company challenged a Texas Motor Vehicle Board decision that it says improperly restricts e-commerce.

The state claims that the automaker's Internet sales initiative amounts to selling directly to consumers, violating a Texas law that bars manufacturers from being auto dealers.

Ford's used-car e-commerce programs operate in several cities, including Boston, New York and San Francisco. Customers in those areas can visit *www.fordpreowned.com* for a listing of preowned vehicles and prices. Purchasers put down a $300 electronic deposit and then complete the transaction at a local dealership.

Threatened With Fines

Ford quit selling its preowned cars via the Internet in the Houston area in November, after the state threatened participating dealers with $10,000 in fines. But the car company maintains that having to do so was unjustified.

The Web site acts as a "virtual inventory" for dealers, said Ford spokesman Peter Olsen. After a customer puts down a deposit, the vehicle and title are transferred to the dealer, who makes the sale, he said.

"We sell through our dealers," said Olsen. "We don't sell direct."

The sales aren't predetermined because a customer can decide not to buy a car after driving it, Olsen explained.

Carol Kent, director of enforcement at the Texas Motor Vehicle Board, said the Internet component obscures the real issue. Ford would be barred from doing the same type of transaction in any other medium, such as a catalog, according to Kent.

"You can't sell something you don't own," said Kent. "And the dealer doesn't own the car" when it's listed on the Web site.

High Stakes

But for Ford, the fight has significance beyond any lost sales, said Jonathan Gaw, an analyst at International Data Corp. in Mountain View, Calif. According to Gaw, the Internet arrangement improves Ford's branding.

"They are trying to make sure Ford customers remain Ford customers," he said.

A ruling in the case will likely be made by fall, said Kent.

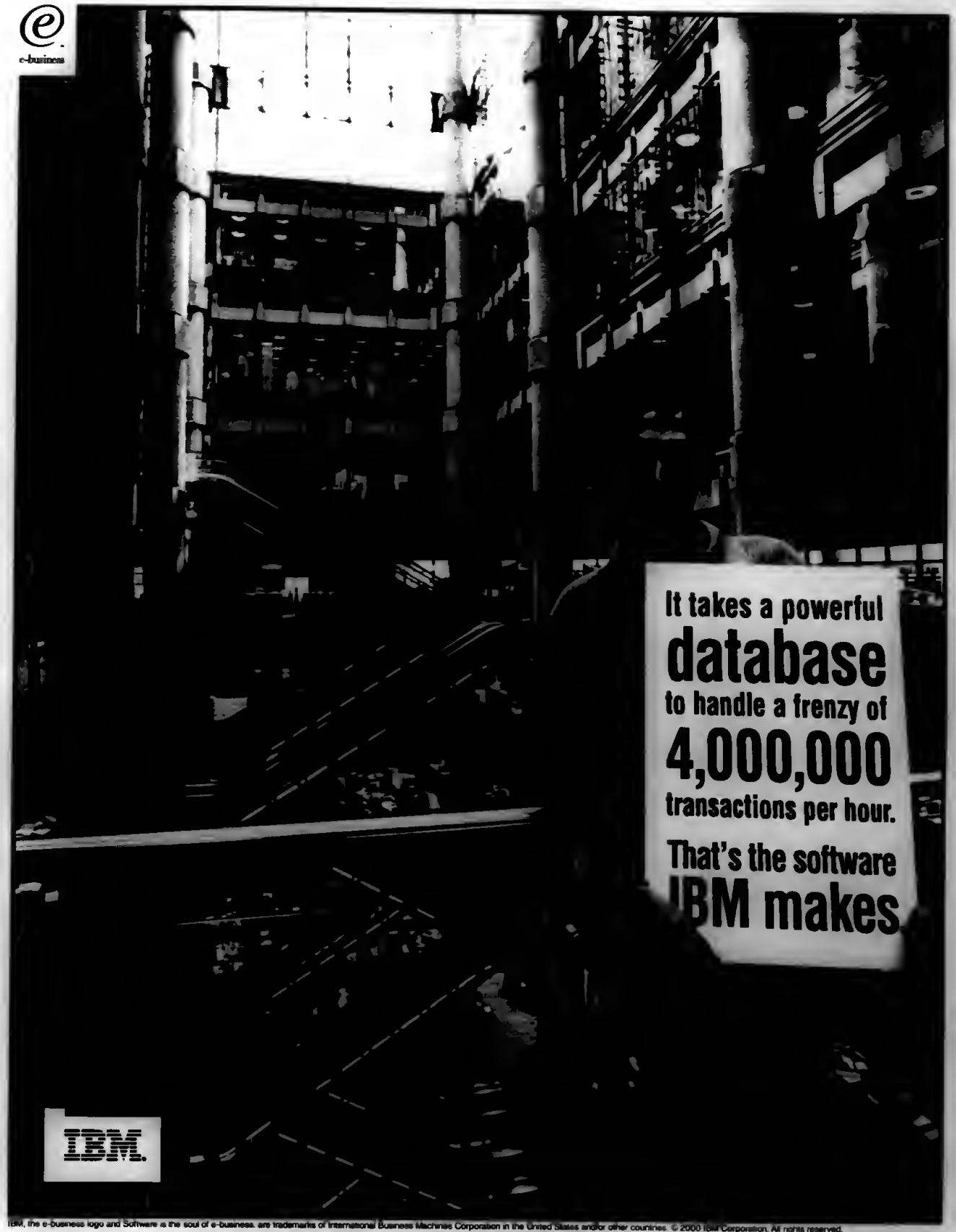
Ford vs. Texas

What constitutes an online sale?

The problem: Ford quit marketing its used cars online in Texas after the state ruled that the company violated a law barring manufacturers from selling directly to consumers.

Ford's story: The automaker says it only lists its preowned cars and their prices on the Web. A buyer makes an electronic deposit at the site, and then a dealer sells the car.

Texas' claim: Ford controls and therefore makes the sale because it owns and sets prices on the listed used vehicles. Dealers serve as transaction and delivery coordinators.



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Reports Predict Online Travel Shakeout by 2005

Only the strong will survive, say experts

BY MICHAEL MEEHAN

THE STILL-booming online travel market is headed for a shakeout that will eliminate maoy smaller players, say two reports released last month.

New York-based iovestment brokerage Bear, Stearns & Co. estimated that 80% of the approximately 1,000 travel-related Web sites will disappear by 2005.

Jupiter Communications Inc. in New York reported that travel will continue to be a leading e-commerce sector but that the industry's current triple-digit growth will slow to between 10% and 20% by 2003.

"You've either got to get really big or you've got to get really specialized," said Melissa Shore, a senior analyst at Jupiter. "People aren't going to want to buy travel from companies who don't know what they're doing."

The Heat Is On

The reports coincide with intensified competition among major players in the travel industry. Expedia Inc., the Bellevue, Wash., online travel agency spun off by Microsoft Corp. last year, just unveiled a flight pricing engine that will offer customers choices by drawing information directly from the central reservation systems of air carriers.

Meanwhile, four air carriers plan to launch their own collective Web site, code-named T2, this summer. The coosortium is hoping to topple the leading travel Web site, run by Travelocity.com Inc. in Fort Worth, Texas.

T2, started by United Air Lines Inc., Delta Air Lines Inc., Northwest Airlines Inc. and Continental Airlines Inc., will feature special fares from those carriers plus another 23 carriers in the program.

"But having special fares alone does oot guarantee success," warned Sbore.

She said the site must be easy to navigate and well-marketed, and have a broad product line.

Another question is whether the T2 airlines can work well together. For example, "wbo gets to offer the lowest fare?" asked Suzi Levine, Expedia's marketing manager.

Analysts at Bear, Stearns said they expect airline sites sucb as T2 and online travel agencies sucb as Expedia to share the market equally.

At a recent air-travel conference in San Jose, Travelocity CEO Terrell B. Jones said that although airlines own and schedule the planes, the online agencies can maintain their positions using the massive databases they have built to target customers.

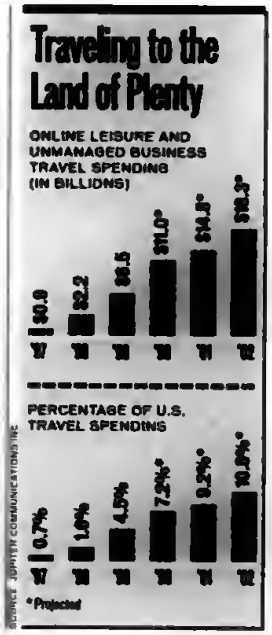
Travelocity brings in customers by allowing them to seek flights according to fare, not schedule, and by offering virtual vacatioo brocbures.

"If they can see their vacation before they go, they'll make a very different choice, and they can do that with broadband," Jones said.

Jones said he isn't concerned about being undersold by the airlines' T2 site. "If they have the prices that are on airlines' sites today, I'm not worried," Jones said. "I compete against that now."

Expedia will phase in its flight-pricing engine over 18 months, so customers will have a choice of up to 1,200 itineraries oo two screens, instead of the 10 to 15 itineraries in the current model.

The company will use in-house technology that plugs directly into the Atlanta-based Worldspan LP global reservations network. The T2 Web site will use Worldspan as well.



Travel 'Booking Engines' to Merge

New firm hopes to dominate market

BY MICHAEL MEEHAN

The boom in the online travel industry has created a similar boom in the market for middleware that can link central reservations systems to easy-to-maintain Web sites.

Two of the leading vendors of middleware for travel-booking systems merged recently in hopes of dominating the market for booking engines.

Dublin-based Datalex Ltd. will absorb Portland, Ore.-based Sight & Sound Software Inc. The two companies have helped create Web sites for Delta Air Lines Inc., American Airlines Inc. and the National Railroad Passenger Corp., better known as Amtrak.

Engines Encourage Free-for-All

The booking engines allow everyone from air carriers to retail chains to grab for a slice of the online travel pie, which Forrester Research Inc. in Cambridge, Mass. projects will be a $29 billion market in 2003.

Middleware, such as Sight & Sound's BookSmart and Datalex's BookIt, will be a key factor in that expansion, said Lorraine Sileo, on online-travel analyst at PhoCus Wright Inc. in Sherman, Conn.

"There's a lot of second- and third-tier players, international carriers, business-to-business operations and e-commerce sites [that] would like to add travel [services] that can take advantage of their products," Sileo said.

BookSmart can communicate with global reservation systems like Sabre, Amadeus and Worldspan, while plugging into a broad range of applicatioo servers such as IBM's WebSpbere, Art Technology Group Inc.'s Dynamo or BroadVision Inc.'s One-to-One. Third-party integrators such as New York-based PricewaterhouseCoopers have used the product to create online reservations systems — including one for Aer Lingus Group PLC in Dublin.

The new company will support both the BookIt and BookSmart products for the immediate future.

SNAPSHOT

Electronic-Business Boomers

A study by ActivMedia Research LLC found that many of the fastest-growing business-to-customer Web sites posted net income losses last year. Only Intimate Brands Inc., parent of the Victoria's Secret lingerie line, and United Air Lines Inc. turned profits, according to the study.

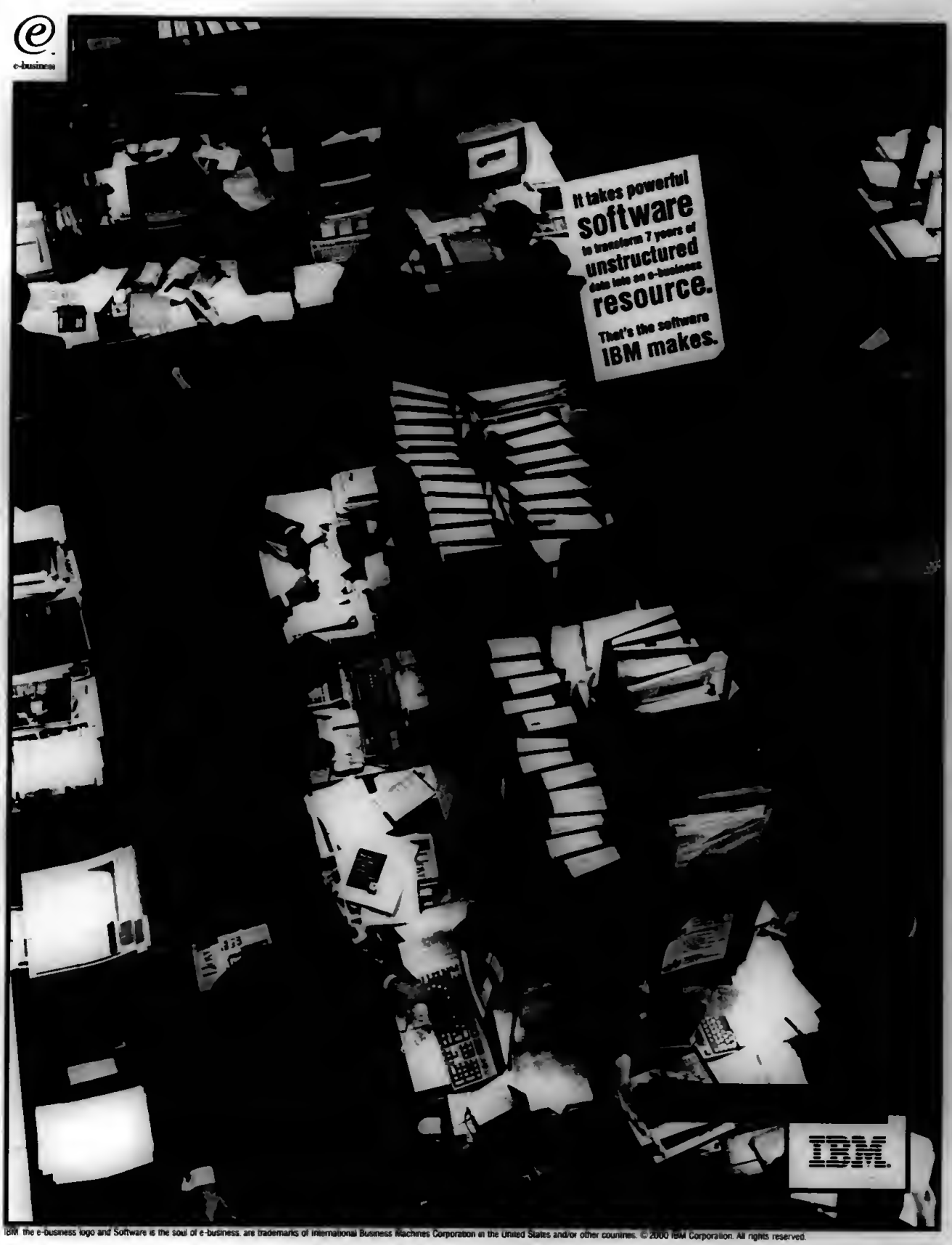
	% INCREASE IN ONLINE SALES	1999 REVENUE OR INCOME (MILLIONS)	% OF TOTAL SALES FROM ONLINE	NET INCOME (MILLIONS)
Intimate Brands	8,900%	$90	2%	$459
Drugstore.com Inc.	3,400%	$35	100%	-$116
KB Kids.com Inc.	3,400%	$35	100%	-$60
Toys R Us Inc.	2,100%	$44	<1%	-$132
CarMax Group	1,780%	$94	5%	-$24
Priceline.com Inc.	1,277%	$482	100%	-$1,055
Webvan Group Inc.	1,200%	$13	100%	-$109
MotherNature.com Inc.	1,100%	$6	100%	-$54
United Air Lines	980%	$216	1%	$1,235
AutoTrader.com LLC	960%	$615	44%	N/A

AT A GLANCE

Online Booking

Datalex's e-travel middleware performs these functions:

- Supports different application servers such as WebSphere from IBM, One-to-One from BroadVision and Netscape Application Server
- Isn't tied to a computerized reservations system (CRS) and allows consumers to shop among different systems on multiple interfaces
- Allows site designers to modify business rules without making code changes
- Minimizes CRS transactions by caching information in parallel



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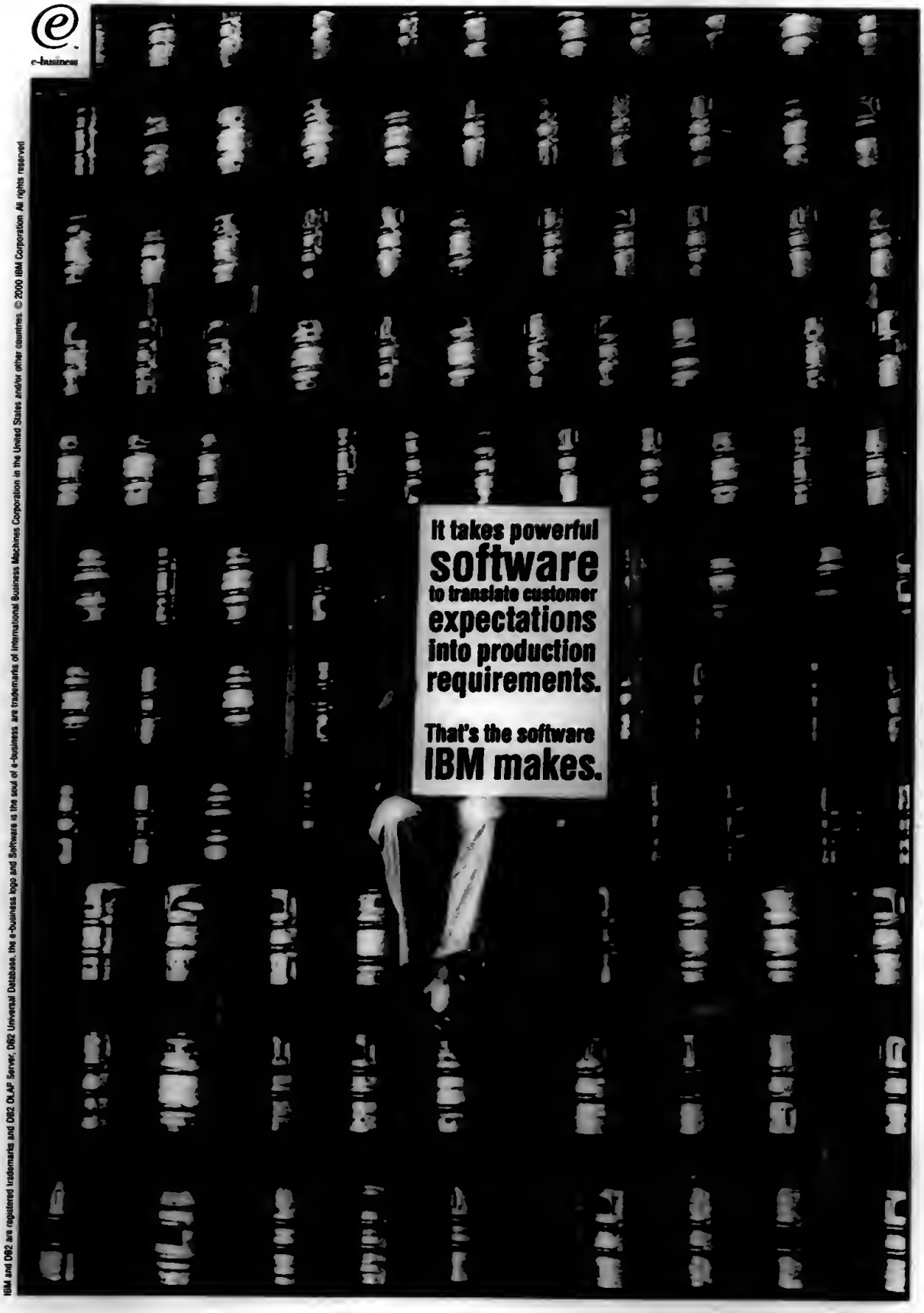

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Internet Speed Pushes Database Makers to Shift Gears

Leaders move toward commoditization

BY CHRISTINE McGEEVER

The Internet economy's voracious appetite for information has made data a commodity. But the tools for managing that data have always been complex and expensive — characteristics that don't fit the average e-commerce business plan.

In response, Oracle Corp., Microsoft Corp. and IBM have been working to make their products easier to use. Each has taken a different approach.

Oracle reduced its consulting head count and added customer sales and support portals on the Web. Executives cited the former move as being behind Oracle's stellar third-quarter earnings, said product manager Jeremy Burton.

Oracle also announced a sales-oriented alliance with Cisco Systems Inc. in San Jose and EMC Corp. in Hopkinton, Mass., through which it will offer predefined combination packs that incorporate all three companies' products targeted at different markets.

Microsoft's SQL Server 2000, currently being beta-tested, includes business intelligence and data warehousing logic that's ready to run or can be used as the foundation for further customization.

In February, the company announced the formation of Avanade Inc., a joint venture with Andersen Consulting in Chicago that will provide Microsoft-specific sales and consulting to corporate customers.

IBM has released DB2 Universal Database Version 7, which includes the OLAP Server component, formerly packaged as a separate option. The company also announced that it was significantly increasing its database sales force and adding a flexible pricing plan intended to allow application service providers to license DB2 Version 7 for a small investment.

The result of these efforts is the same, said officials from each vendor: rapid deployment at minimal cost that is more in keeping with Internet business life cycles.

"More functionality, less complexity," Ben Barnes, general manager at IBM's Global Business Intelligence Solutions division, said of IBM's goal.

But at the same time, IBM is trying to avoid a slide toward a "database-as-commodity" approach.

"I don't think we're at the point where you can make your decision on price alone," said Jeff Jones, senior program manager at IBM's Data Management Solutions.

Mitch Landry, director of product marketing at Embarcadero Technologies Inc. in San Francisco, said DB2 Version 7 is a huge improvement in terms of Web readiness, and both the product and the company appear to be able to keep up with the competition.

But analyst Norma Schroder at San Jose-based Dataquest was less optimistic about the emergence of a possible leader.

"None is right; they are just different," Schroder said.

ORACLE

- Cutting consulting staff and using the Web for customer sales and support.
- Prepackaging products with Cisco and EMC.

MICROSOFT

- Integrating SQL Server 2000 with business intelligence and data warehousing logic in the beta version.
- Forming Avanade with Andersen Consulting to reach enterprise customers.

IBM

- Incorporating OLAP Server into DB2 Universal Database Version 7.
- Adding hundreds of database sales and consulting staffers.

Here's to a faster Web site. the Compaq TaskSmart C-Series server.

KEVIN FOGARTY/BRICKS AND CLICKS

Privacy disasters

THE CHILDREN'S ONLINE PRIVACY Protection Act, which went into effect a couple of weeks ago, will be the most influential piece of failed legislation to hit the e-commerce world since a federal judge a few years ago tried to reverse telegraph-era case law by ruling that contracts negotiated across a wire aren't legally binding.

On its face, the act seems like any piece of well-meaning but completely impractical legislation. It mandates that sites get permission from a young prospect's parents before asking for personal information from anyone under age 13. Sites can get permission via e-mail unless they plan to share that information with business partners, advertisers or others who might be able to use demographic data for nefarious (i.e. marketing) purposes.

In those cases, the sites have to actually confirm permission by fax or phone — a logistical feat whose likelihood is vanishingly small if the number of targeted tykes grows beyond a couple hundred at best.

The problem is that the act was drafted to protect the privacy of children online while completely ignoring how people interact on the Web. Remember the "On the Internet, no one knows you're a dog" cartoon? Well, no one knows you're a 9-year-old, either.

Kevin Fogarty is *Computerworld*'s business editor. Contact him at kevin_fogarty@computerworld.com.

And that means trouble for nearly all e-commerce sites. Because when the kid privacy act fails, its proponents — people who were already prepared to go overboard to shield kids from all the potential nasties on the Internet — will slam new legislation in place in the worst possible way: in a hurry, at a time when people are overreacting about the whole issue. And that will make the rule more far-reaching, more complicated for e-commerce sites and more draconian.

E-commerce companies must come up with their own legislation that effectively guarantees online privacy and defines when and how consumers can expect their information to be private.

Otherwise, they will soon be put in a position of having to accept outrageously restrictive privacy regulations that endanger the online liberty of their customers. That's because the level of oversight necessary to enforce those rules can come only if the government reserves for itself uses of your corporate data that it specifically forbids to you.

It takes only a couple of irate voters, a couple of members of Congress with a sense of moral indignation and a badly constructed piece of legislation to set this mudslide moving.

The only question is who will be buried when it hits the bottom of the hill. ◗

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CONFERENCE AGENDA

Sunday, June 18, 2000

12:00pm - 5:00pm
Registration

7:00pm - 9:30pm
Pre-Conference Networking Reception

Monday, June 19, 2000

8:30am - 9:00am
Welcome and Opening Overview
Maryfran Johnson, Editor-in-Chief
Computerworld

9:00am - 8:45am
Opening Keynote: "IT Leadership vs. E-Leadership"
Charlie Feld, E-Leader and former CIO, Delta Airlines
CEO, The Feld Group

10:00am - 11:30am
"The Naked Truth About B2B E-Commerce"
Nora Fogarty, Business Editor
Computerworld

E-COMMERCE

11:30am - 12:15pm
Insider View: "Raytheon Corp.'s Unfolding E-Business Strategy"
Eric Singleton, Director of Global E-Business
Raytheon

12:30pm - 1:45pm
Interactive Luncheon with IT Leaders

2:00pm - 3:30pm
"Enterprise Security: Will Only the Paranoid Survive?"
Priscilla Tate, President
Technology Managers Forum

SECURITY

3:30pm - 4:15pm
Afternoon Keynote: "Innovation & Change"
Thornton May, VP of Research
Cambridge Technology Partners

4:30pm - 9:30pm
Premier Sponsor Breakout Sessions 1 and 2

8:30pm - 9:30pm
Expo Open and Reception/Buffet Dinner

Tuesday, June 20, 2000

8:45am - 9:00am
Remarks and Day Two Overview

9:00am - 8:45am
Keynote
David Lord, CEO
Toysmart.com

ASPs

11:30am - 12:15pm
Featured Speaker
Peter Solvik, CIO
Cisco Systems

12:30pm - 2:00pm
Buffet Lunch and Expo Open

"Taking the E-Customer Tightrope"

E-CUSTOMERS

3:30pm - 4:15pm
Insider View: "Taking Care of E-Customers at Autobytel"
Ann Dellignite, COO
Autobytel.com

4:15pm - 4:45pm
Premier Sponsor Breakout Session 3

4:45pm - 6:30pm
Expo Open and Reception

7:00pm - 8:00pm
Premier 100 Awards Presentation and Gala Dinner
Featured Keynote: Jim Yost, CIO
Ford Motor Company

Wednesday, June 21, 2000

8:45am - 9:00am
Remarks and Closing Day Overview

HIRING

10:30am - 11:15am
Closing Keynote: "Putting All the Pieces Together: The E-Management Challenge"
Peter Keen, Author, The e-Process Edge, and Chairman
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WORKSTYLES

What It's Like to Work at . . . Airborne Express

Interviewee: Patty Conway, manager of the field services technologies unit
Company: Airborne Freight Corp.'s Airborne Express (*www.airborne.com*)
Main location: Seattle, on the Puget Sound waterfront
What is the field services technologies unit? The liaison between central information technology, the drivers (about 14,000) and the local dispatch stations (about 300 worldwide)

Number of IT employees: "We have six now in field services, and we're ramping up for a wireless project, so we'll [have] 30 by next spring." Central IT has 440 employees.
Number of employees (end users): About 20,000
Major project: "We just got funded [$50 million for five years] to do a wireless real-time dispatch and proof-of-delivery system. . . . We also do the business-case development and the financials, so we're part of a much longer life cycle than just the IT life cycle."
How will the project change field operations? "Right now, we have a very decentralized voice environment, using acoustic couplers to download information twice a day." The new system will use two-way Motorola Inc. pagers to relay information.
How is your group's relationship with the field employees? "Communication is good. We've had critical design meetings where the field people come in and give their input. . . My people tend to know the field, but we suggest to all the [central] IT support folks that they spend a day on the trucks to understand what the business [process] is. . . . We make ourselves very available to them."
Technology training: "Most of our training is hands-on. . . . I hope to get some people training in project management."
Workday: "Most people arrive between 6:30 and 7:30 a.m. and leave at 4 and 5 p.m., unless we're on a critical project. Then it's lots of hours, all the time. During deployments, we work on weekends because we're a six-day operation."
Employee reviews: Annually
Bonuses: Annual bonuses and Airborne Project for Excellence, a cash performance award. No spot bonuses, "but I would like to see those set up."
Dress code: "It tends to be more casual than some of the traditional business units."
Decor: "There's some artwork, but the views are the real artwork. We look out over Puget Sound and the Olympic Mountains, and there's also a view of downtown Seattle. One of our buildings has decks on each floor that extend from one end of the building to the other, and most of the cubes and offices have windows."
Must people carry beepers and cell phones? "We wear pagers with real-time e-mail, and we carry cell phones when we're doing deployments and rollouts. At this point, we don't have an on-call rotation, but we will have to work that out as we get further along in the project. We're not often called in after hours because support for field systems is provided by central IT, so we only have to get involved if there's a major problem."
Percentage of staff who telecommutes: "There's not a lot right now, but I would like to allow more of that."
On-site day care? No
Food: "We're located in a great part of the city with lots of ethnic restaurants and delis."
The one thing everyone complains about: "The hardest thing is parking. Some people in my group don't qualify for parking privileges, and they have to park on the street, so they come in early to get free parking."
Where the staff gossips: "In the summer, out on the decks."
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PAUL A. STRASSMANN

Finding Net profits

BUSINESS-TO-BUSINESS E-COMMERCE is being hailed as the next great opportunity to expand the influence of IT people. Terms such as *value-chain streamlining* and *disintermediation of workflow processes* have crept into the vocabulary of aspiring IT job candidates, as corporate executives push their IT shops to abandon newly installed client/servers or half-completed enterprise systems for another round of huge investments.

As the frenzy escalates to junk old systems or transform software into Internet-based e-commerce applications, who will benefit from an enormous opportunity to cut previously untouchable information costs now embedded within the existing value chain? Costs will be cut when the dynamics of purchasing decisions shift from supplier-to-supplier bargaining to centralized management of the entire procurement process through e-commerce applications that link the production systems of millions of suppliers without intervention by brokers, dealers, wholesalers and promotion agents.

Nevertheless, whenever predictions of huge savings call for a CFO to write a multimillion-dollar check, an IT executive may boost his standing by offering clues for where the profits may end up after the business-to-business e-commerce revolution settles down in the near future.

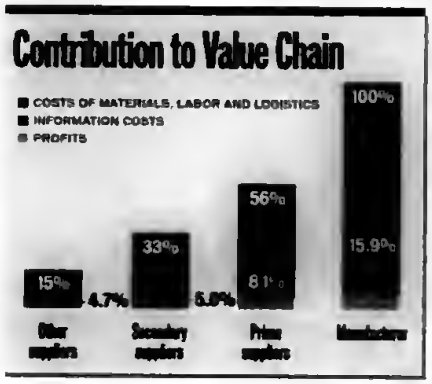
It's difficult to find authoritative estimates that quantify the cost savings that e-commerce generates. I was intrigued to read [*Fortune*, March 20] that Delphi Automotive, Owens Corning and United Technologies saved $60 million, $9 million and $32 million, respectively, by purchasing components, packaging materials and circuit boards on the Internet. Such savings — ranging from 9% to 43% — are difficult to conceive if one considers that suppliers of industrial goods already suffer from very slim profit margins. The huge savings must come from something else!

An Examination

Looking for clues, I examined the financial databases of more than 10,000 U.S. industrial suppliers and analyzed their cost structures. Since suppliers of finished goods, in turn, depend on other suppliers, I was able to construct a simplified financial model of the median costs of the supply pipeline. It offers an explanation of where the money is spent.

In the chart, 100% of the value-chain contribution equals the price charged by a typical manufacturer. At each step in the chain, each supplier spends money for materials, labor and logistics. Then, each succeeding supplier adds overhead (information costs) then tags on profit. Therefore, for example, the "other suppliers" contribute 15% to the value chain and "secondary suppliers" contribute the difference between 33% and 15%, until it all adds up to 100%.

At each stage, a firm adds information expenses for sales, marketing, administration, research and development and IT. These costs, averaging 15.9%, are included in the manufacturer's sales price, thus taking a big chunk out of the manufacturer's value added of 44% of revenue (the difference between its 100% and the 56% paid to "prime suppliers").



The suppliers also contribute their shares of information costs to a product's final sales price. All told, the information costs at each of the four stages add up to 34.5% of a product's price, which sticks out as the largest cost-cutting target for boosting profits.

What does this mean for the CIO? It's imperative that he begin to analyze the total costs of delivering information within the entire value chain before launching an e-commerce project. Remember that whomever has the power to extract value chain savings and add to profits will see the greatest benefits.

Strassmann can be reached at paul@strassmann.com. This is the first in a series of articles in which he will analyze the costs of processing information from a raw materials supplier to the consumer.

WORKSTYLES

What It's Like to Work at . . . Airborne Express

Interviewee: Patty Conway, manager of the field services technologies unit
Company: Airborne Freight Corp.'s Airborne Express (*www.airborne.com*)
Main location: Seattle, on the Puget Sound waterfront
What is the field services technologies unit? The liaison between central information technology, the drivers (about 14,000) and the local dispatch stations (about 300 worldwide)

Number of IT employees: "We have six now in field services, and we're ramping up for a wireless project, so we'll [have] 30 by next spring." Central IT has 440 employees.
Number of employees (end users): About 20,000
Major project: "We just got funded [$50 million for five years] to do a wireless real-time dispatch and proof-of-delivery system. . . . We also do the business-case development and the financials, so we're part of a much longer life cycle than just the IT life cycle."
How will the project change field operations? "Right now, we have a very decentralized voice environment, using acoustic couplers to download information twice a day." The new system will use two-way Motorola Inc. pagers to relay information.
How is your group's relationship with the field employees? "Communication is good. We've had critical design meetings where the field people come in and give their input. My people tend to know the field, but we suggest to all the [central] IT support folks that they spend a day on the trucks to understand what the business [process] is. . . . We make ourselves very available to them."
Technology training: "Most of our training is hands-on. . . . I hope to get some people training in project management."
Workday: "Most people arrive between 6:30 and 7:30 a.m. and leave at 4 and 5 p.m., unless we're on a critical project. Then it's lots of hours, all the time. During deployments, we work on weekends because we're a six-day operation."
Employee reviews: Annually
Bonuses: Annual bonuses and Airborne Project for Excellence, a cash performance award. No spot bonuses, "but I would like to see those set up."
Dress code: "It tends to be more casual than some of the traditional business units."
Decor: "There's some artwork, but the views are the real artwork. We look out over Puget Sound and the Olympic Mountains, and there's also a view of downtown Seattle. One of our buildings has decks on each floor that extend from one end of the building to the other, and most of the cubes and offices have windows."
Must people carry beepers and cell phones? "We wear pagers with real-time e-mail, and we carry cell phones when we're doing deployments and rollouts. At this point, we don't have an on-call rotation, but we will have to work that out as we get further along in the project. We're not often called in after hours because support for field systems is provided by central IT, so we only have to get involved if there's a major problem."
Percentage of staff who telecommutes: "There's not a lot right now, but I would like to allow more of that."
On-site day care? No
Food: "We're located in a great part of the city with lots of ethnic restaurants and delis."
The one thing everyone complains about: "The hardest thing is parking. Some people in my group don't qualify for parking privileges, and they have to park on the street, so they come in early to get free parking."
Where the staff gossips: "In the summer, out on the decks."
Perks: Discounts on major airlines; free passes to local attractions like zoos and museums.
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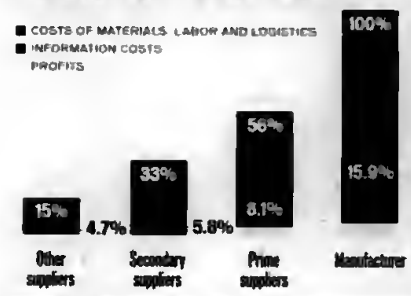

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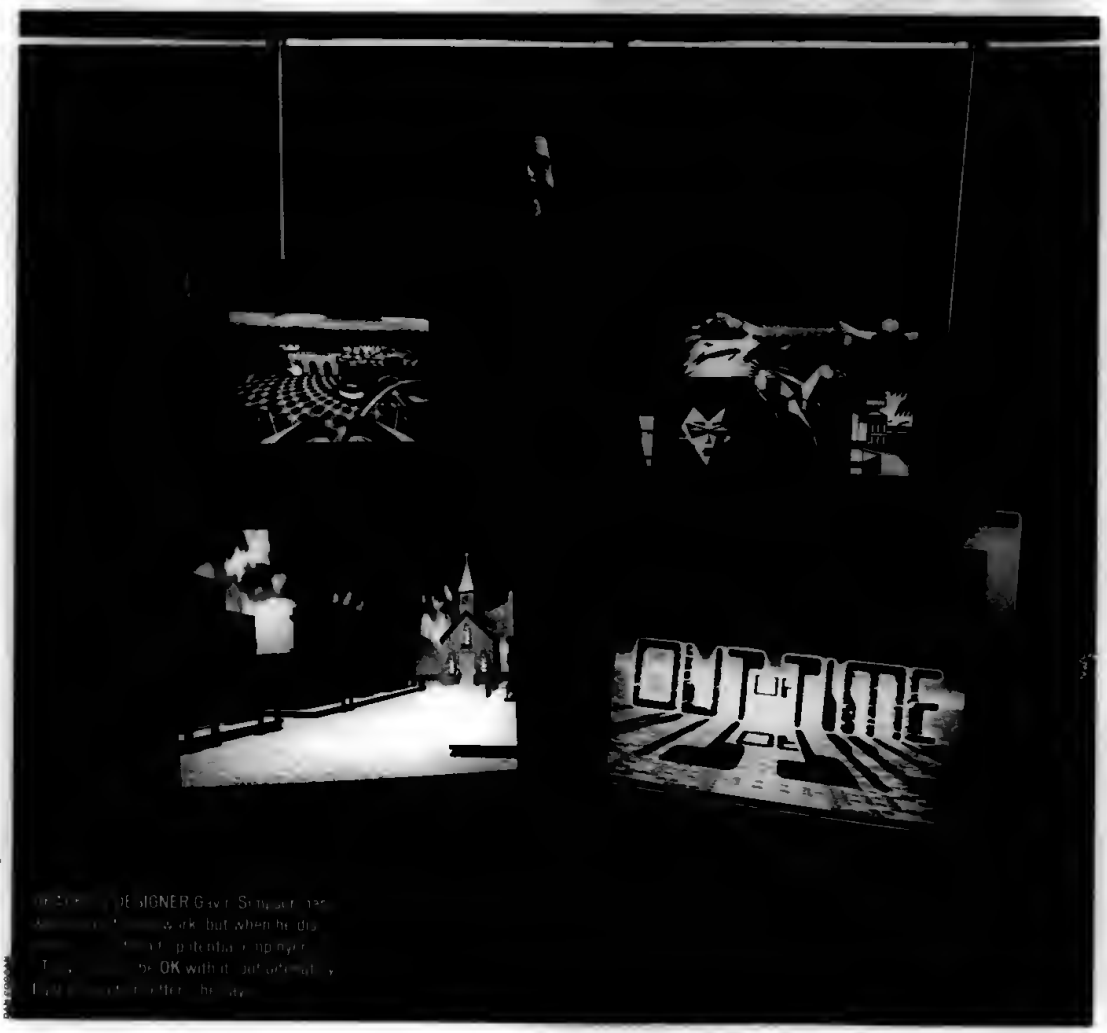
the Invisible Workforce



[illegible] DESIGNER Gavin Simpson [illegible] work but when he dis[illegible] potential employer [illegible] OK with it [illegible]

AVIN SIMPSON first tasted the bitterness of rejection years ago on the playground, looking for pickup basketball games. "He waited and he waited and he waited," recalls his father, Wendel. "Sometimes the kids just looked right past him and asked someone to go out and find another player. My God, that hurt!"

Gavin, now 31, is still being rejected. And it still hurts. He's a bright, accomplished computer graphics designer. And he's earning straight A's toward his second college degree. But he's been turned down by 12 employers so far. The reason, says his father: his autism.

The physically disabled have made much progress in the workplace since the passage of the Americans With Disabilities Act in 1990. Experts say that discrimination has decreased and that employers generally are willing to provide the special accommodations needed by employees with physical impairments.

But significantly less progress has been made by those with mental, or intellectual, disabilities. That includes some 6 million adult Americans who are mentally retarded or have psychiatric illnesses such as schizophrenia or neurological disorders such as autism.

People with such disabilities are often overlooked by employers. Indeed, 60%, or 3.6 million, aren't working, according to InfoUse, a firm in Berkeley, Calif., that specializes in information about people with disabilities.

Fear and ignorance of people with disabilities exists, and such individuals are often stigmatized. Even if job applicants elect not to disclose their disabilities, they may exhibit odd mannerisms that put off employers. For example, people with autism, a neurological disorder usually present at birth, often have poor social and communication skills and shun personal contact.

"Interviewers look positively at my résumé because I'm very well-qualified," says Gavin Simpson, who has won several prizes in computer graphics and wants to work in computer animation. "But I don't know what they think about the drawbacks there might be — that I'm somehow a little bit 'different.' They don't give anybody brownie points for being autistic."

Simpson says he's undergone communication and behavior therapy to improve his interpersonal skills, and he always discloses his autism to prospective information technology employers. "They seem to be OK with it, but ultimately, I get a rejection letter," he says.

Many government and private organizations for the mentally disabled focus on treatment but not on job training and placement. And those programs that are employment-oriented are often

The physically disabled have made considerable progress in the workforce. But despite record unemployment and a critical shortage of skilled IT workers, those with mental or intellectual disabilities remain largely invisible to employers.

By Gary H. Anthes

geared toward finding minimum-wage and subminimum-wage jobs in what advocates for the mentally disabled call the three F's — food, filing and filth.

But advocates say people with mental disabilities represent a rich and largely untapped pool of candidates for IT jobs, from data entry to programming to Web design. Barbara Granger, director of training and dissemination at Philadelphia-based Matrix Research Institute, a nonprofit research and training center for the mentally and physically disabled, says many of the mentally ill people whom Matrix trains for jobs ask specifically for computer training.

"When you ask them why they want to work with a computer, you get right into some of their issues, such as having trouble concentrating and having some problems communicating with other people," Granger says. "The computer provides great structure for them."

Larry Kohn, who directs training in computer use at the Center for Psychiatric Rehabilitation at Boston University, says his students tell him that they like working with computers because PCs have no prejudice against mental illness. They also like the immediate and unambiguous feedback — something they don't always get from people, he says.

Beth Keirns, a data entry clerk at Alexander, Aronson, Finning & Co. in Westboro, Mass., was diagnosed with autism 11 years ago at age 21. She says she often inadvertently offends people, because her disorder makes it hard for her to understand "social nuances."

Keirns, who holds a degree in biology, credits her six years of successful employment at the accounting firm in part to a sensitive supervisor who has acted as her "advocate" with other employees. And "the computer seems to turn me on in certain areas," she adds. "I don't have to worry about offending it."

Reasonable Accommodation

In a 1996 report, the President's Committee on Employment of People With Disabilities wrote: "People with mental, cognitive and psychiatric disabilities constitute perhaps the single most persecuted and least understood group of individuals in the disability community. The stigma associated with mental illness remains an oppressive obstacle to employment."

There has been some slow progress since then, but that statement is still essentially true today, says committee co-chairman Neil Jacobson. He has cerebral palsy, a neurological disorder that afflicts some 500,000 Americans.

The Americans With Disabilities Act requires employers to make "reasonable accommodation" in the workplace for people with disabilities. Accommodating the mentally disabled is often easy and inexpensive, experts say. Flexible work hours, time off for therapy appointments, a quiet place to work or job coaches — often provided for free by rehabilitation agencies — may be required.

When asked what reasonable accommodations should be made for the mentally disabled, Jacobson, who is also vice president of corporate systems architecture at Wells Fargo Bank NA in San Francisco, says, "Whatever it takes to get the job done. That's what I do for all the people who work for me, whether they are disabled or not."

And Jacobson urges job applicants and employees to disclose their disabilities. "This is part of who you are, and I would hope you are proud of who you are," he says. "I'd hope this would be done not negatively or pitifully, but rather with pride."

But Paolo del Vecchio, a senior analyst at the Center for Mental Health Services at the U.S. Department of Health and Human Services in Rockville, Md., says, "With the stigma of psychiatric disabilities still so prevalent, disclosure is really an individual decision based on circumstances." At a previous job, he chose to disclose his own depression.

Continued on page 54

Coping With Psychiatric Problems on the Job

Top strategies for coping with stress on the job:

- 62% Taking a break
- 47% Keeping quiet or withdrawing
- 41% Stretching or exercising

Major support mechanisms on the job:

- 49% Medication
- 34% Spouse/partner
- 33% Psychiatrist/therapist
- 27% Boss

Accommodations most frequently used:

- 49% Flexibility to modify daily tasks
- 33% Flexibility in which hours or days are worked
- 31% Provision of a private workplace

Most stressful experiences on the job:

- 41% A feeling of having to fit in and act like everyone else
- 39% Having to assert oneself regarding job responsibilities
- 36% Interpersonal difficulties

Top challenges to working:

- 74% Feeling tired
- 66% Having mood swings
- 63% Being unable to concentrate

Top disclosure decision:

- 86% Disclosed disability to employer
- 63% Had few or no regrets after disclosure

SOURCE: CENTER FOR PSYCHIATRIC REHABILITATION [illegible] FROM THE NATIONAL SURVEY OF PROFESSIONALS AND MANAGERS WITH PSYCHIATRIC CONDITIONS. A SURVEY OF 500 AMERICANS WHO HELD PROFESSIONAL OR MANAGERIAL POSITIONS AFTER EXPERIENCING PSYCHIATRIC PROBLEMS. [illegible]

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Continued from page 51

A database administrator who asked not to be named says he has been diagnosed as clinically depressed and takes medication. "It is difficult to hold down a computer job when you are depressed," he acknowledges. "A lot of times you feel worse than the people around you. Others have the typical workplace crises, but they are mucb worse crises to me."

The man says he disclosed his depression during bis first job interview with his current employer and was asked back for a second interview with a promise to "accommodate" his disability if he was hired. "They made the offer, but they didn't really understand what the issue is, and the accommodations haven't been made," he says.

Mentors Lighten the Load

Larry Abramson is the vocational director of the Back to Work Program at St. Luke's House Inc., a psychiatric rehabilitation program in Bethesda, Md. He says the employment rate for people with "serious mental illness" is just 20% in the U.S., but 65% of the mentally ill graduates of his program are working. As for accommodations, he says, "there is no magic. High-quality management practices that you want to use with all your employees work well for people with psychiatric disabilities."

Andy Imparato, president of the American Association of People witb Disabilities in Washington, says it's often helpful to assign a mentor to a new employee with a mental disability. "Make sure you don't bring in someone and expect them to just sink or swim," he says.

The Prudential Insurance Company of America in Newark, N.J., hires people with different types of mental disabilities. Some come in through regular hiring channels and others through "supported-employment" programs, in which a nonprofit agency sponsors disabled employees and provides on-the-job coaches.

There are several advantages to supported-employment programs, says Bruce Dalziel, senior vice president of financial management at Prudential. The coaches cost the employer nothing and can relieve supervisors from having to provide the time-consuming training that disabled employees may require.

"Another advantage is if that person doesn't work out, the supported-employment provider is able to locate a more appropriate job," he says. "One fear managers have is having to fire someone with a significant disability."

Dalziel says he's been involved in the placement of 15 mentally disabled employees at Prudential, and they have enriched the work environment in subtle ways. He says watching these dedicated, enthusiastic employees at work inspires co-workers and prompts them to discount their own petty gripes and differences.

"In the first placement I made, I was working in a really quantitative area where people were more interested in things than people," Dalziel says. "The addition of that [mentally retarded] person changed people's attitudes. I think it took the stress level down, and it just put things in perspective a little better."

Alexander, Aronson, Finning has two mentally retarded women, in addition to Keirns, on the payroll. "For these folks, this is the most important thing in their lives, and they give it their all," says Jill Priester, an executive assistant and their supervisor. Keirns, for example, takes two buses to Westboro and then walks two miles to the office every day.

Priester describes the women's work as "excellent" but says there are challenges for employee and employer alike. Keirns is easily distracted and upset and must be given "pep talks" occasionally to keep her on track. "We sometimes just give her time out and ask her to go outside and walk around the building and come back," Priester says.

Keirns acknowledges the difficulties. "Overstimulation [and] certain types of noises drive people with my condition crazy, especially high-pitched noises and unexpected noises," she says. "And if there's a franticness in the office, or tension associated with anger, that also makes me high-strung."

Priester says another woman, mentally retarded as a result of a blow to tbe head by a baseball bat wben she was a child, has such a negative attitude that she can't be assigned to work with others. But she works well by herself, copying paper files to microfilm, and she has been employed at the firm for 11 years. When asked whetber she would hire more people like these women, Priester answers without hesitation, "Absolutely."

Rethink Management Style

In addition to providing a specific accommodation such as flexible working hours, a different management style may be appropriate with some employees who have mental disabilities, says Richard Baron, a Philadelphia-based private consultant and an expert on the employment of people with psychiatric disabilities.

"They may need to be told a little more directly and a little more often what it is you want them to do and where their performance is falling short," he says.

Gavin Simpson says that when he discloses his autism during interviews, he always points out the benefits of his temperament. "I tell them the skills that autistics have are often manifested creatively," he says. "And one of the traits is we are hard-working, working on something very painstakingly until it's just right."

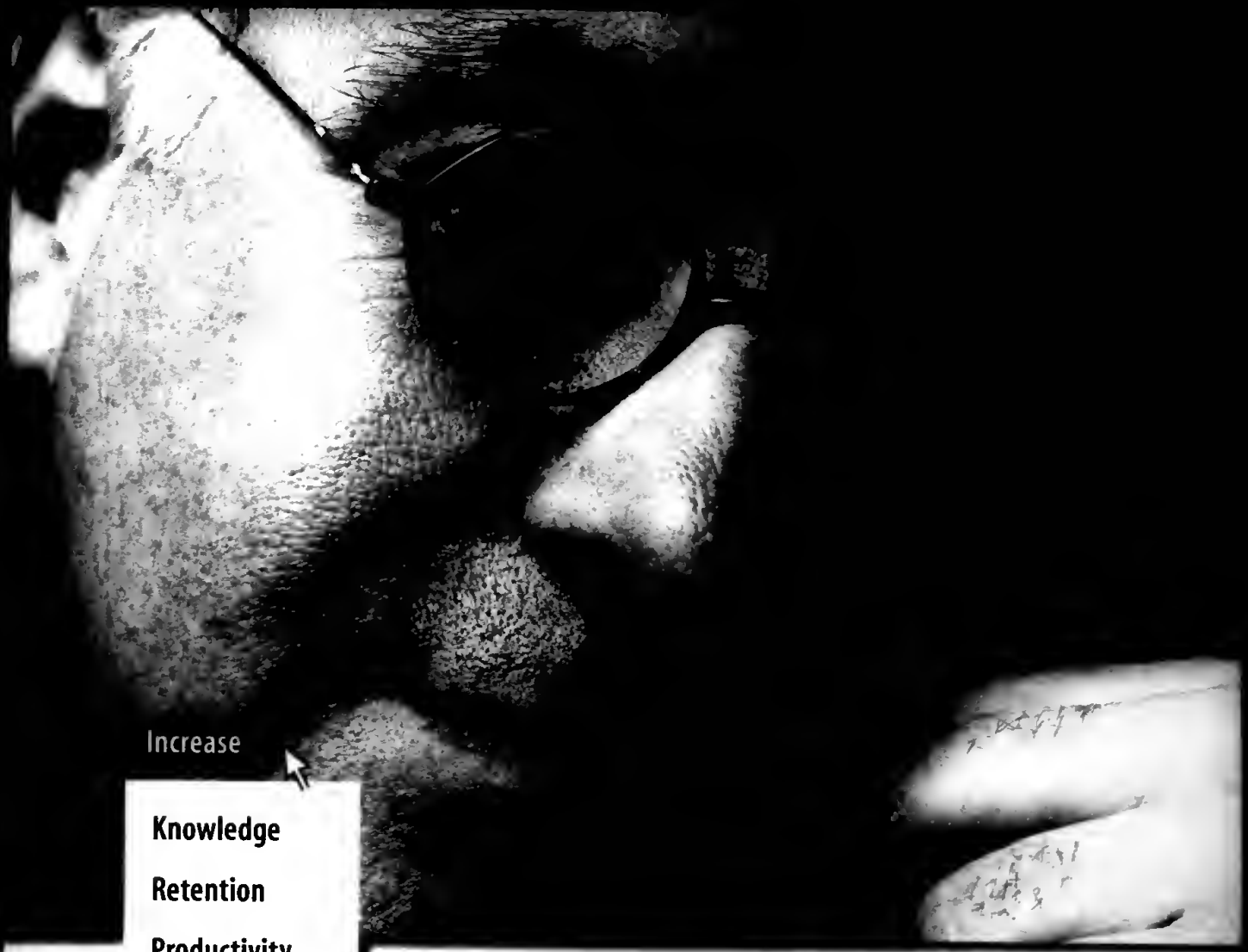
When asked what kind of work environment would be best for someone with a mental disability, be says, "An environment that's not overly hectic with a lot of deadlines, because autistics seem to have trouble with deadlines. Give them projects that allow them to explore and use their creativity and problem-solving [abilities]."

Wendel Simpson says his son, like many adults with autism, is a perfectionist with "laserlike" concentration and the ability to work on a problem for 16 hours at a stretch. Of those days on the playground long ago, Wendel says, "He was the first to be able to do a slam dunk — because be practiced it all by himself, hour after hour — and his days on the sidelines, autistic or not, were over."

The elder Simpson says he sees the basketball experience as a metaphor for his son's future in IT, but he doesn't sound like he really believes it.

"Gavin is a bright guy, and he sees people with less talent and ability — but no 'differences' — getting jobs, and he isn't," he says. "Those observations are beginning to depress him. I see the light going out in his eyes, and that hurts. It becomes harder and harder to say, 'Hang in there, Gavin. Your opportunity will come.' "

> This is part of who you are, and I would hope you are proud of who you are.
>
> NEIL JACOBSON (ABOVE), CO-CHAIRMAN, PRESIDENT'S COMMITTEE ON EMPLOYMENT OF PEOPLE WITH DISABILITIES, AND VICE PRESIDENT OF CORPORATE SYSTEMS ARCHITECTURE, WELLS FARGO BANK NA



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THE $11 BILLION WEB START-UP

GE Aircraft Engines built a business-to-business e-commerce site at supersonic speed, thanks to a clear corporate mandate, aggressive leadership and input from customers. By Kathleen Melymuka

ALTHOUGH ITS BUSINESS IS JETS, GE Aircraft Engines (GEAE) has never been known for moving at supersonic speed. Quality, thoroughness and methodology have made it the world's largest producer of aircraft engines, but it moves more like a C-130 than an F-15.

Early last year, wheo it came to Chairman Jack Welch's Internet strategy, GEAE, a division of General Electric Corp. was clearly stalled. A massive customer-extranet initiative was collapsing under its own weight, leaving GEAE in the dust of sibling companies that had quickly embraced e-commerce.

Here's how the $11 billion company transformed itself in three months from a plodding, straight-laced electronic-business-technology underachiever to a kamikaze start-up with an impossible missioo and an attitude that failure simply wasn't an option.

GROUNDED

Last May, as it became clear that an ungainly, unfocused and overly complex 18-month e-commerce attempt would never get off the ground, CEO Jim McNerney changed course. He recruited a human dynamo named John Rosenfeld to jump-start e-commerce by taking one part of the failed vision — a customer Web center for the complex spare-parts business — and building it at lightning speed.

Rosenfeld, a former Green Beret who has led jump teams from 20,000 feet, is used to tough assignments, and he liked McNerney's mandate: "Kick open doors; break down barriers. Break some glass if you have to, but get this thing rolling."

Rosenfeld explains why this was do-or-die time for e-commerce: "The technique of being a fast follower no longer works. Things move so fast that the first one to jump in is drying off on the other side of the pool before you even think of jumping. And GEAE was behind. That's why there was such an urgency about moving fast."

But Rosenfeld took time to plan. He assembled a small team that spent the next three months quizzing GEAE's external customers — mostly airlines and aircraft manufacturers — about their needs. Their feedback would be crucial throughout the project. "That allowed us to build the right thing and allowed them to feel a part of it," says Ric Davila. "Their taking some ownership of it is a big win for us, because if they don't use it, we failed."

Davila, an early recruit, was the team's Six Sigma Black Belt, a standard position on all GE projects, whose job was to ensure that Welch's corporatewide quality initiative was integrated into all processes.

Another key constituency was senior management. A GE mantra is that if you want the business to change, get the leadership to change. So Rosenfeld launched an electronic-mentoring process to educate top brass about the Web. It worked. McNerney, who used to have his secretary print his e-mail, was soon yoked to his laptop and checking in online from around the world.

As summer turned to fall, Rosenfeld began recruiting from the business units and from outside the company. He hired people in 24 hours. At the end of an interview, if the candidate was right, he made an offer on the spot. Those who accepted on the spot were processed immediately.

Meanwhile, McNerney recruited Dave Overbeeke to lead the broader e-commerce initiative, which Rosenfeld's project was to spearhead, and Scott Guilfoyle came over from GE Plastics to become CIO for electronic business. Guilfoyle's first job would be to tie all the proposed Web functionality to GEAE's back-end Oracle Corp. systems.

AT A GLANCE

GE Aircraft Engines

HEADQUARTERS: Cincinnati

ANNUAL REVENUE: $10.56 billion

EMPLOYEES WORLDWIDE: 33,000

BUSINESS: Engines for commercial and military aircraft

CUSTOMERS: Airlines, aircraft manufacturers and military contractors

Guilfoyle, a GEAE veteran who had been away for years, remembered its information technology staff as a bunch of methodical engineers who worked in the basement. But McNerney and Overbeeke assured him that electronic-business IT would be different.

ELECTRONIC SPACE

Overbeeke had decided that GEAE's manufacturing plant was the wrong environment for his team. He wanted a neutral place to assemble team members from every corner of the company, and he wanted the space to reinforce their energy and excitement and to provide the automony for them to do things their way. So he commandeered a vacant concrete warehouse full of old pallets and barrels and turned it into a clubhouse. It was across the street from the GEAE plant in Cincinnati but light-years away from the GEAE standard of engineers toiling in the basement.

The space has cavernous, open ceilings and rounded, open "pod" workspaces painted in vibrant, warm shades of orange, green and purple. Above it all hangs a gridwork of suspended white plastic mesh trays that guide dozens of multicolored cables running like a visible electrical current through the space. A great design feature, it enables new cable connections to be made in seconds. Overbeeke has scattered toys throughout the space — air hockey, Foosball, a pool table — to help people let off steam. "We are trying to create a new environment within GE that will allow for maximum creativity," Rosenfeld says.

The main conference room, wryly christened "Cognito," is a wide-open, step-down space between two pods that's full of state-of-the-art electronic and audiovisual equipment. McNerney's idea: "When you have meetings, I want everybody to see it. I want them to catch the energy, get the virus."

On Oct. 15, the team moved into the front half of its new space as construction continued in the back. "You've got all these people crowded in — taking any table, any space," Guilfoyle recalls. "The 'back 40' is under construction, so you've got pounding — Bam! Bam! Bam! — and drilling — Rrrrrr! Rrrrrrr! — bang-

Continued on page 60

BRAD SMITH

FROM LEFT: John Rosenfeld, John Whitenack, Debby Sollenberger, Dave Overbeeke and Scott Guilfoyle (seated) mix fun with energy at GE Aircraft Engines

lunch with co-workers

You always know who's picking up the tab. And how to expense it. You're more than an independent professional - you're a guru. Whether you're a virtual CIO, sales consultant, or anything in between, you now have a home on the web. An all-inclusive source for projects, resources like health insurance and tax tips, and a place to connect with other gurus just like you.

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THE $11 BILLION WEB START-UP

Continued from page 57

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"We try all the time to have what Jack [Welch] calls a small-company environment with the muscle of a big company," he says. "We're always working on that, but this is over the top."

Team members are clearly enjoying their upstart image, and they boast that senior GE leadership has been known to ask teasingly to see their body piercings. But it's a start-up with a difference. "We're not a garage," Overbeeke says. "We're an $11 billion business that has an incredible desire to get this done and the resources to do it."

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For example, late in the project, a demonstration was scheduled for a key customer, but the site wasn't working properly. Rather than cancel the demo, Davila and his team boarded a plane to the customer site. While they were in the air, the team back home furiously attacked the final bugs. By the time the plane landed, the site was up.

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Rosenfeld found that his gonzo approach was contagious. "We had a little resistance up front, but once people started seeing how effective it was, they wanted to be a part of it. They all started moving at light speed. The janitors go through here faster than they do in the other buildings."

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The last part of the juggernaut fell into place when the team found two key vendors, SpaceWorks Inc. in Rockville, Md., and Enigma Inc. in Burlington, Mass., that were able to match the team's commitment. "They had the same culture; they were energized," Overbeeke says. "They were going to die on their swords trying."

GE's corporate CIO, Gary Reiner, says the project is a great example of GE's famous "boundaryless culture" in action, melding the strengths of engineering, marketing, service, pricing and IT. "They co-located that team and brought that together in record time," he says. "They were able to cut through a whole lot of stuff to get this done."

The customer Web center went live on schedule, with 14 customers online by the end of January and plans for all 300 customers to be online by midyear.

LAUNCH LESSONS

No one claims that the site is perfect. Julie Gruntrip, a Six Sigma Black Belt, is focusing on customer feedback and tracking issues to help solve problems and head off difficulties for future customers.

But customer response has been enthusiastic. "As far as support and service, this is way ahead of the others we deal with," says Piotr Wolak, a project manager in Continental Airlines' engineering group. "It will make my job easier. And if the other [suppliers] do not go the same route, my personal loyalty will be with GE."

The e-commerce effort has only just begun. The team will broaden the effort to other GEAE business units while improving its robustness. "Running an Internet company is not something we've done before, so all the processes that go around making it a stable operation are being established as we go," says Guilfoyle. "It's a tremendous challenge."

There's also the 800-pound gorilla of back-end integration: 85% of orders come through electronic data interchange (EDI), and though the site tracks those orders, most customer back-end systems aren't integrated with the Web. So if a customer orders online, the payment systems don't kick in. "We've got to close that loop," Rishforth says.

Meanwhile, Guilfoyle is leveraging e-commerce throughout GEAE by using the familiar Six Sigma Black Belt model. He's appointing "e-belts" — dedicated top-notch people in each division — to own and drive Web thinking in the business units. "We're the gurus; we set the architecture and direct it," he says. "The e-belts will generate the rest."

Guilfoyle predicts that tying e-commerce to Six Sigma energy will be powerful. "Get ready for the wave when these e-belts start kicking into gear," he says. "When GE believes in something, it happens. Everything that was Priority 1 will start to look like Priority 2 real quick." ◗

10 STEPS TO LAUNCHING A B-TO-B SITE IN RECORD TIME

1. Have a very powerful, very committed business champion.
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3. Turn top executives into Web geeks.
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What the Site Does

GEAE's Customer Web Center has the following functions, tailored for each customer's needs:

Spare-parts order management: Checks parts availability, finds alternative parts, places orders, builds automated parts lists (for parts usually ordered together), checks status of orders, including EDI, phone or fax orders, and tracks orders via UPS and FedEx.

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COMING FUNCTIONS

Online wizards: Will determine return on investment for engine upgrades (e.g., part X will save Y dollars in maintenance over time frame Z).

Online video training: Will help users brush up on how to remove, install or service a part.

E-BUSINESS AT GEAE

The Customer Web Center is one prong of a comprehensive e-business effort at GEAE that's under the direction of e-business leader Dave Overbeeke. Here are its components:

E-commerce: Develops and enhances customer Web centers.

E-supply chain: Develops and enhances supplier Web centers, including electronic auctions.

E-process: Develops and enhances an intranet customized to each employee's needs.

E-strategy: Identifies, assesses and fosters cutting-edge opportunities for enhancing electronic business.

E-IT: Supports all Web activities and integrates Web thinking throughout GEAE IT.

THE $11 BILLION WEB START-UP

Continued from page 57

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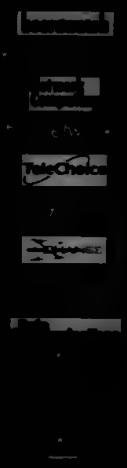
• Frame Relay/ATM netwark running at 99.999% reliability

THUMBS-UP
FOR INTERMEDIA'S
QUALITY
& SERVICE!



intermedia
COMMUNICATIONS

FINANCIAL & BUSINESS CONCEPTS IN BRIEF

Micropayments

DEFINITION

Small online payments ranging from a few cents to about $10. Such transactions are commonly made to download software or information, buy low-priced merchandise, make donations or pay membership fees. Web merchants can sign up with micropayment vendors, which handle online billing and payment collection and take a portion of the amount paid.

BY MELISSA SOLOMON

BACK IN THE early '90s, when the Web was starting to gain ground, micropayments seemed to be the key to the growing e-commerce market.

Merchants could sign up with micropayment companies, which would handle online billing and payments that ranged from a few cents to about $10.

But the systems never really caught on, says Avivah Litan, an analyst at Stamford, Conn.-based Gartner Group Inc.

Gartner is in the midst of a study on the use of micropayment services. The goal is to survey 150 major retailers, asking if they offer low-priced items online, and if so, whether they use micropayment services. So far, of the 75 merchants surveyed, 13% said they offer items for $10 or less, but none use micropayment vendor services, says Litan.

"The moral of the story is that there is a big need for a solution, and none of these vendors have caught on," she says. "It's just not showing up on their radar screens."

Fading Hype

When micropayments first came on the scene, people were still struggling with the concept of cyberspace, and there was a strong demand for Internet-exclusive billing systems, explains Paul Hagen, an analyst at Forrester Research Inc. in Cambridge, Mass.

But eventually, users began to realize they didn't need separate online billing systems, Hagen says.

"Why not just take a credit card and roll everything up?" he says. "I think [the micropayment concept] was overkill. It was a solution looking for a problem."

So after a few years, micropayment companies started to fade from the scene. They enjoyed a minor comeback with the recent explosion of e-commerce, but things have settled back down, says Hagen.

"It ebbs and flows," he explains.

The biggest barrier for most micropayment vendors is that their services require too much extra work for merchants, says Litan. Often, merchants have to install special software or create links to the company's Web site.

Another problem, she says, is that micropayment systems aren't universal. To buy an article from *The New York Times* on the Web, for instance, customers can pay through Seattle-based Qpass Inc. The same customer might then want to download software from Santa Clara, Calif.-based McAfee.com Corp., but McAfee uses Seattle-based eCharge Corp. to handle its billing.

"No one's got critical mass," says Litan.

One merchant who asked not to be identified says his company is trying to sharpen the relationship with its micropayment vendor, but the results haven't been impressive.

For merchants, the one benefit of using a micropayment vendor would be if that vendor had a large member base and attracted customers to the site. But so far, he says, his company's micropayment vendor hasn't generated much traffic for his site.

There is also the problem of security. Customers want to be sure their information is secure, and merchants need protection against fraud.

Many micropayment vendors use digital signature technology to ensure the identity of the buyer. And several, such as eCharge, cover losses from fraud.

"That's a big deal," says eCharge Chairman Ron Erickson.

Leader of the Pack?

Although micropayments aren't taking off, there may be some potential leaders on the horizon.

Qpass, for instance, has focused on attracting publications such as The Wall Street Journal Interactive Edition, LATimes.com and Forbes.com.

"I think Qpass has found a nice little niche," says Hagen.

But the big push, according to both Litan and Hagen, seems to be on person-to-person payment companies such as PayPal.com in Palo Alto, Calif., which merged in March with its competitor, X.com Corp.

In fact, PayPal, which provides a popular payment method at online auction site eBay Inc., recently reached the million-consumer mark.

"Conceivably, that could be a winning solution," says Litan.

PayPal has a new competitor, though. Billpoint Inc. in San Jose, which offers a similar payment method, was launched by eBay and San Francisco-based Wells Fargo & Co. in March and has been doing very well, says Hagen.

"I think it's going to be huge," he says of the market for person-to-person payments.

Erickson says eCharge doesn't view person-to-person payment systems as direct competitors. "We see them more, if you will, as a Western Union of the Web."

The entire micropayment industry has a long way to go before it's a well-defined entity, says Erickson.

"Is there business there?" Erickson asks. "I think it's a real chicken-and-the-egg thing."

Micropayments haven't taken off because there hasn't been much to buy on the Web for less than $10, he explains. But if there's a simple payment service, more products will become available.

The industry will take off "when you can just go click, click and have it happen and show up on your cable bill," Erickson says.

COMPANY	PAYMENT OPTIONS	MEMBERS
iPin *San Francisco*	Charges at member sites are added to customers' Internet service provider bills.	More than 60 merchants, including eMusic.com Inc. and Clicknovie.com Media.
eCharge *Seattle*	Charges at member sites are added to customers' phone bills. A new debit-credit service is expected to launch this quarter.	More than 80 merchants, including the Better Internet Bureau Association and Legalresource.com Inc.
Qpass *Seattle*	Charges at member sites are paid for monthly with credit cards. Qpass also offers PowerWallet, which adds purchases at nonmember sites to customers' monthly bills.	Seventeen merchants, including *The New York Times* on the Web and Forbes.com.
IClickBrands *New York*	Prepaid IClickCharge accounts can be used at member merchant sites.	Nineteen merchants, including iRenovate.com Inc. and MusicHall 2000.
PayPal *Palo Alto, Calif.*	Customers buy PayPal cash with credit cards, checks or bank accounts and have money sent to recipients via e-mail. Recipients are paid by check, or money is deposited into their bank accounts.	More than 1 million consumers.

Are there business terms you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.

JOE AUER/DRIVING THE DEAL

IT as profit center? It can be done

THE TEMPTATION — and sometimes pressure — for IT departments to market their services externally and become, in essence, profit centers can be great. These "suppliers" have some very distinct advantages and disadvantages in the marketplace.

Many major corporations are moving toward a shared-services structure, where departments typically viewed as overhead types (e.g., IT, accounting, human resources, purchasing and others) must operate as businesses. This means that they must market to the company's business units (BU) the same services they used to provide automatically with the costs usually allocated to the business units for these overhead departments. In a shared-services environment, these departments must recover their costs by charging their internal "customers" agreed-to fees based on service-level agreements. In many cases, the BUs are no longer required to use those internal resources and can go outside the company for these services.

It might sound too revolutionary, but it's being done successfully in some large, conservative companies.

Some have underestimated the changes — after all, the corporation is just going from an allocation to a direct-charge mode for the same services. But beware: Significant cultural and organizational changes must take place for this shift to succeed. For example, IT managers who used to be concerned only with making sure operations could handle demand now have to become marketeers and compete with external providers who are full-time, experienced, trained professional vendors with winning sales plans.

On the BU side, managers can finally break away from IT departments they say were never very responsive anyway. Now they can go out to the market, but they're faced with the unknowns in dealing with suppliers at arm's length. These suppliers must make profits while their lawyers make sure the customers take most of the risk. At least the BUs can compare the internal IT department's pricing and services to those in the marketplace.

Some large IT departments are going beyond this model, trying to enter the marketplace to sell and service external customers and compete with other suppliers in the process. The stakes in this endeavor are even higher than just marketing to the BU manager, who more often is like a colleague than a customer.

Now, the former staff cost-center IT guy must really become sophisticated in marketing, sales, negotiations, scoping a deal, contracts and relationship management. What's more, he'll be running with the big dogs like IBM and EDS, and there is an entry fee: Staffing up and developing the expertise to compete is no small task. Developing an effective marketing strategy and creating a presence in the marketplace are challenges that, unless successfully met, can leave this new supplier at a disadvantage compared with more established vendors.

JOE AUER is president of International Computer Negotiations Inc. (www.dobetterdeals.com), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High Tech Acquisition Professionals. Contact him at joe@dobetterdeals.com.

But if the transition is done well, the IT-department-turned-supplier should have some clear advantages. Most important, it has been a customer, lived with its customers and — one hopes — managed operations efficiently. It may also be able to boast an experienced, cohesive staff with a solid track record. This can spell a clear advantage over other suppliers who probably have to put together a completely new team to handle the account once they've sold the deal. When marketing to the corporate BUs, IT can also capitalize on the fact that they both have the same shareholders and corporate bottom line and, as a result, should have the same goal, which can form the basis for a *real partnership*.

Internal IT groups have some daunting challenges in the marketplace. But by capitalizing on their strengths and marketing themselves assertively, they can give their competitors a run for their money and bring some new, outside money to the corporate bottom line. And once they've proved themselves against outside competition, their internal customers will calm down about bringing in outside companies to replace them.

With these potential results, the whole idea can be worthwhile. ▸

BRIEFS

Previo, HP to Roll Out Network Appliance

Previo Inc., formally known as Stac Software Inc., a data-compression company in San Diego, plans to roll out this week a new network appliance with Hewlett-Packard Co. called SureStor Auto Backup. The system is designed for workgroups in the enterprise and will be available exclusively though HP. Previo also plans to announce a software-only version of the product.

Mary Kay Goes B-to-B

Extricity Inc., an e-commerce software maker in Redwood Shores, Calif., said it has made a deal to supply its XML-based business-to-business software to $2 billion cosmetics company Mary Kay Inc. The Extricity software will be used to integrate inventory, purchase order and sales information between Dallas-based Mary Kay and its partners in the supply chain.

Ixos Taps Fujitsu Siemens Pres for CEO

Ixos Software AG announced last week the appointment of Robert Hoog as the company's first CEO. Hoog, who plans to start June 1, will manage the global operations of the Grasbrunn, Germany-based document management software provider.

Hoog was previously co-president at Fujitsu Siemens Computers BV, a computer vendor formed through a joint venture between Tokyo-based Fujitsu Ltd. and Munich, Germany-based Siemens AG's systems unit.

Leadership Shifts At Panasonic

Matsushita Electric Industrial Co., which sells products under the brand name Panasonic, announced last week that its president, Yoichi Morishita, plans to step down later this year.

Kunio Nakamura, a senior managing director at the Osaka, Japan-based company, will take over as president, and Morishita will become chairman, replacing Masaharu Matsushita, who will take on the new title of honorary chairman and executive advisor.

SNAPSHOT

1. Workplace violence
2. Internet/intranet security
3. (tie) Business interruption and disaster recovery
5. Fraud/white-collar crime
6. Employee selection/screening concerns
7. General employee theft
8. Unethical business conduct
9. Hardware/software theft
10. Drugs/alcohol in the workplace
11. Sexual harassment/EEOC

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But eventually, users began to realize they didn't need separate online billing systems, Hagen says.

"Why not just take a credit card and roll everything up?" he says. "I think [the micropayment concept] was overkill. It was a solution looking for a problem."

So after a few years, micropayment companies started to fade from the scene. They enjoyed a minor comeback with the recent explosion of e-commerce, but things have settled back down, says Hagen.

"It ebbs and flows," he explains.

The biggest barrier for most micropayment vendors is that their services require too much extra work for merchants, says Litan. Often, merchants have to install special software or create links to the company's Web site.

Another problem, she says, is that micropayment systems aren't universal. To buy an article from *The New York Times* on the Web, for instance, customers can pay through Seattle-based Qpass Inc. The same customer might then want to download software from Santa Clara, Calif.-based McAfee.com Corp., but McAfee uses Seattle-based eCharge Corp. to handle its billing.

"No one's got critical mass," says Litan.

One merchant who asked not to be identified says his company is trying to sharpen the relationship with its micropayment vendor, but the results haven't been impressive.

For merchants, the one benefit of using a micropayment vendor would be if that vendor had a large member base and attracted customers to the site. But so far, he says, his company's micropayment vendor hasn't generated much traffic for his site.

There is also the problem of security. Customers want to be sure their information is secure, and merchants need protection against fraud.

Many micropayment vendors use digital signature technology to ensure the identity of the buyer. And several, such as eCharge, cover losses from fraud.

"That's a big deal," says eCharge Chairman Ron Erickson.

Leader of the Pack?

Although micropayments aren't taking off, there may be some potential leaders on the horizon.

Qpass, for instance, has focused on attracting publications such as The Wall Street Journal Interactive Edition, LATimes.com and Forbes.com.

"I think Qpass has found a nice little niche," says Hagen.

But the big push, according to both Litan and Hagen, seems to be on person-to-person payment companies such as PayPal.com in Palo Alto, Calif., which merged in March with its competitor, X.com Corp.

In fact, PayPal, which provides a popular payment method at online auction site eBay Inc., recently reached the million-consumer mark.

"Conceivably, that could be a winning solution," says Litan.

PayPal has a new competitor, though. Billpoint Inc. in San Jose, which offers a similar payment method, was launched by eBay and San Francisco-based Wells Fargo & Co. in March and has been doing very well, says Hagen.

"I think it's going to be huge," he says of the market for person-to-person payments.

Erickson says eCharge doesn't view person-to-person payment systems as direct competitors. "We see them more, if you will, as a Western Union of the Web."

The entire micropayment industry has a long way to go before it's a well-defined entity, says Erickson.

"Is there business there?" Erickson asks. "I think it's a real chicken-and-the-egg thing."

Micropayments haven't taken off because there hasn't been much to buy on the Web for less than $10, he explains. But if there's a simple payment service, more products will become available.

The industry will take off "when you can just go click, click and have it happen and show up on your cable bill," Erickson says.

Pay the Piper

Micropayment companies offer a range of payment options, including the following:

COMPANY	PAYMENT OPTIONS	MEMBERS
iPin *San Francisco*	Charges at member sites are added to customers' Internet service provider bills.	More than 60 merchants, including eMusic.com Inc. and Clickmovie.com Media.
eCharge *Seattle*	Charges at member sites are added to customers' phone bills. A new debit-credit service is expected to launch this quarter.	More than 80 merchants, including the Better Internet Bureau Association and Legalresource.com Inc.
Qpass *Seattle*	Charges at member sites are paid for monthly with credit cards. Qpass also offers PowerWallet, which adds purchases at nonmember sites to customers' monthly bills.	Seventeen merchants, including *The New York Times* on the Web and Forbes.com.
1ClickBrands *New York*	Prepaid 1ClickCharge accounts can be used at member merchant sites.	Nineteen merchants, including iRenovate.com Inc. and MusicHall 2000.
PayPal *Palo Alto, Calif.*	Customers buy PayPal cash with credit cards, checks or bank accounts and have money sent to recipients via e-mail. Recipients are paid by check, or money is deposited into their bank accounts.	More than 1 million consumers.

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JOE AUER DRIVING THE DEAL

IT as profit center? It can be done

THE TEMPTATION — and sometimes pressure — for IT departments to market their services externally and become, in essence, profit centers can be great. These "suppliers" have some very distinct advantages and disadvantages in the marketplace.

Many major corporations are moving toward a shared-services structure, where departments typically viewed as overhead types (e.g., IT, accounting, human resources, purchasing and others) must operate as businesses. This means that they must market to the company's business units (BU) the same services they used to provide automatically with the costs usually allocated to the business units for these overhead departments. In a shared-services environment, these departments must recover their costs by charging their internal "customers" agreed-to fees based on service-level agreements. In many cases, the BUs are no longer required to use those internal resources and can go outside the company for these services.

It might sound too revolutionary, but it's being done successfully in some large, conservative companies.

Some have underestimated the changes — after all, the corporation is just going from an allocation to a direct-charge mode for the same services. But beware: Significant cultural and organizational changes must take place for this shift to succeed. For example, IT managers who used to be concerned only with making sure operations could handle demand now have to become marketeers and compete with external providers who are full-time, experienced, trained professional vendors with winning sales plans.

On the BU side, managers can finally break away from IT departments they say were never very responsive anyway. Now they can go out to the market, but they're faced with the unknowns in dealing with suppliers at arm's length. These suppliers must make profits while their lawyers make sure the customers take most of the risk. At least the BUs can compare the internal IT department's pricing and services to those in the marketplace.

Some large IT departments are going beyond this model, trying to enter the marketplace to sell and service external customers and compete with other suppliers in the process. The stakes in this endeavor are even higher than just marketing to the BU manager, who more often is like a colleague than a customer.

Now, the former staff cost-center IT guy must really become sophisticated in marketing, sales, negotiations, scoping a deal, contracts and relationship management. What's more, he'll be running with the big dogs like IBM and EDS, and there is an entry fee: Staffing up and developing the expertise to compete is no small task. Developing an effective marketing strategy and creating a presence in the marketplace are challenges that, unless successfully met, can leave this new supplier at a disadvantage compared with more established vendors.

JOE AUER is president of International Computer Negotiations Inc. (*www.dobetterdeals.com*), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High Tech Acquisition Professionals. Contact him at joea@dobetterdeals.com

But if the transition is done well, the IT-department-turned-supplier should have some clear advantages. Most important, it has been a customer, lived with its customers and — one hopes — managed operations efficiently. It may also be able to boast an experienced, cohesive staff with a solid track record. This can spell a clear advantage over other suppliers who probably have to put together a completely new team to handle the account once they've sold the deal. When marketing to the corporate BUs, IT can also capitalize on the fact that they both have the same shareholders and corporate bottom line and, as a result, should have the same goal, which can form the basis for a *real partnership*.

Internal IT groups have some daunting challenges in the marketplace. But by capitalizing on their strengths and marketing themselves assertively, they can give their competitors a run for their money and bring some new, outside money to the corporate bottom line. And once they've proved themselves against outside competition, their internal customers will calm down about bringing in outside companies to replace them.

With these potential results, the whole idea can be worthwhile ▶

BRIEFS

Previo, HP to Roll Out Network Appliance

Previo Inc., formally known as Stac Software Inc., a data-compression company in San Diego, plans to roll out this week a new network appliance with Hewlett-Packard Co. called SureStor Auto Backup. The system is designed for workgroups in the enterprise and will be available exclusively though HP. Previo also plans to announce a software-only version of the product.

Mary Kay Goes B-to-B

Extricity Inc., an e-commerce software maker in Redwood Shores, Calif., said it has made a deal to supply its XML-based business-to-business software to $2 billion cosmetics company Mary Kay Inc. The Extricity software will be used to integrate inventory, purchase order and sales information between Dallas-based Mary Kay and its partners in the supply chain.

Ixos Taps Fujitsu Siemens Pres for CEO

Ixos Software AG announced last week the appointment of Robert Hoog as the company's first CEO. Hoog, who plans to start June 1, will manage the global operations of the Grasbrunn, Germany-based document management software provider.

Hoog was previously co-president at Fujitsu Siemens Computers BV, a computer vendor formed through a joint venture between Tokyo-based Fujitsu Ltd. and Munich, Germany-based Siemens AG's systems unit.

Leadership Shifts At Panasonic

Matsushita Electric Industrial Co., which sells products under the brand name Panasonic, announced last week that its president, Yoichi Morishita, plans to step down later this year.

Kunio Nakamura, a senior managing director at the Osaka, Japan-based company, will take over as president, and Morishita will become chairman, replacing Masaharu Matsushita, who will take on the new title of honorary chairman and executive adviser.

SNAPSHOT

IT and Top Corporate Security Threats

IT is a key part in defending against five of the top threats named by corporate security officers in a recent survey conducted by Pinkerton Services Corp. Internet/intranet security is the fastest-growing risk, according to the 300 security managers who responded to the annual survey. IT placed seventh in last year's survey, and 10th in 1997.

1. Workplace violence
2. Internet/intranet security
3. (tie) Business interruption and disaster recovery
5. Fraud/white-collar crime
6. Employee selection/screening concerns
7. General employee theft
8. Unethical business conduct
9. Hardware/software theft
10. Drugs/alcohol in the workplace
11. Sexual harassment/EEOC

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TECHNOLOGY

NOW FEATURING DATA MINING

Hoping to make its flagship database a better fit for Web applications, Microsoft last week released a second beta of SQL Server 2000 featuring a data mining engine, native XML support and integration with Microsoft's BizTalk Server. ▸ 68

SERIOUS SCIENCE

The National Energy Research Supercomputing Center does more than provide platforms for scientific breakthroughs. It also devises computational tools, particularly in the data management area, that will make IT managers' jobs easier. ▸ 68

SOFTWARE FOR THE DISABLED

A law requiring disabled-friendly features in any software purchased by the Fed has vendors scrambling to comply. Adobe Systems, for example, says its Acrobat document-viewing software will support a Microsoft application programming interface, which will link third-party applications to Windows features used by assistive technology. ▸ 70

LOW-KEY ANSWER TO BIG PROBLEMS

Storage networking may sound dull, but it isn't: It's aiming to solve some life-or-death business problems with some pretty cool hardware and software, writes technology editor Robert L. Scheier. ▸ 71

SECURITY JOURNAL

In Week 8, Pat Rabbinsky discovers that Linux isn't that easy to use — nor is RealSecure from Internet Security Systems. But so far, Network Associates' CyberCop looks like a good bet to defend against Web site attacks. ▸ 72

QUICKSTUDY

Few aspects of computer security have achieved the notoriety of malicious software that preys on unsuspecting computer users. Software such as viruses, worms, Trojan horses, logic bombs, zombies and password grabbers work in a variety of ways and have different potential for causing damage. ▸ 74

NEW STANDARD

Prudential Insurance is using emerging standards to build an operations control center to manage information systems worldwide. Its plan includes integrating the Common Information Model into Accessible's Access 1 monitoring-data correlation and report software. ▸ 80

COBOL TO THE WEB

As companies make information from secure mainframes available on the Internet, they are developing a variety of strategies to deal with new security risks. The challenge is balancing the need for customer access with the need for security. ▸ 76

THE 'HUMAN CAPITAL' MARKET

EMERGING COMPANY PERSONIC INC. is expanding its established recruiting business in an effort to become the Nasdaq of human resources, offering a business-to-business procurement exchange for employees. A big question is whether Personic's exchange concept will take hold. And how comfortable will corporate America be ordering employees in the same way it orders a box of pencils?

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I am data.

I am the common, everyday vocabulary of commerce.

I am the language

that articulated

the car you're driving,

shirt you're wearing,

book you're reading,

film you're watching,

product you're selling,

paycheck you're earning,

and swordfish you'll have

at that restaurant tomorrow.

I am the linchpin under all the world's commerce.

Who is the linchpin under me?

We're investing 6 billion dollars in the most far-reaching deployment of broadband out there. We're one of the largest network integrators, and a provider of advanced, global eCommerce solutions. We're SBC. The combined strengths of Ameritech, Pacific Bell, Southwestern Bell, SNET and now Sterling Commerce. You're demanding more. **Start expecting more.**

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SQL Server 2000 Gears Up for E-Commerce

Data mining engine, native XML support added

BY CHRISTINE McGEEVER

HOPING TO MAKE its flagship database a better fit for Web applications, Microsoft Corp. last week released a second beta of SQL Server 2000. The beta features a data mining engine, native support for the content-tagging language XML and integration with Microsoft's BizTalk Server.

If they live up to their promise, the features could ease e-commerce application development and provide a foundation for software developers who want to tailor their products to SQL Server 2000.

Keith Wales, chief technology officer at Pivotal Corp. in North Vancouver, British Columbia, said that although his company hasn't tried to run a production system on the beta, the release is faster in SQL query benchmarks and supports greater scalability in a test environment for Pivotal's electronic-business relationship-management software.

Brian Knight, a Jacksonville, Fla.-based database consultant and the operator of Swynk.com, a Web site for information about Microsoft's BackOffice technologies, said the relational engine has been changed significantly and now provides features that used to be available only from third-party vendors for tens of thousands of dollars.

SQL Server 2000's new data mining engine is an enhanced version of OLAP Services, a component in previous releases of SQL Server. Renamed Analysis Services, the component now includes data transformation tools that users and application developers can use to add business intelligence and data management features to applications running on SQL Server 2000.

SQL Server 2000 product manager Barry Goffe said Microsoft has included a set of data mining algorithms in the database engine. One such algorithm, called a decision tree, can be used to incorporate a shopping cart feature into e-commerce applications. Also included is a dimension algorithm, which allows data to be analyzed by defined characteristics such as age group, gender or income. These algorithms can be used by application developers as a foundation for features they build themselves, Goffe said.

The SQL Server 2000 beta can be downloaded from Microsoft's Web site. Goffe said the final version will be available this summer, but pricing hasn't been established. ▶

AT A GLANCE

SQL Server 2000 Features

XML SUPPORT

- Development tools for manipulating XML inside the database and retrieving XML data without writing code
- E-commerce-oriented document routing from database applications through BizTalk Server 2000

DATA MINING

- OLAP Services renamed Analysis Services, includes clustering and decision-tree data mining algorithms
- Can be easily customized by third-party developers
- Can analyze clickstream data and share results across the Web through firewalls

At the Edge of Science – And Data Management

Gov't lab develops tools that help IT

BY MARK HALL

Horst Simon thinks the next major breakthrough in particle physics won't necessarily come from the mind of the brightest physicist on the planet but from the one with the best data management tools.

As director of the National Energy Research Scientific Computing Center (NERSC) at Lawrence Berkeley National Laboratory in Berkeley, Calif., Simon is responsible for delivering computing resources to 2,500 researchers in 40 states.

Unlike most information technology managers, who deal with diverse and distributed groups of users who need access to e-mail and corporate databases, Simon's constituents require massive databases and the fastest computers to, as the scientists say, help "decipher the secrets of life" or "the fate of the universe."

More important to IT managers, NERSC is devising tools and practices that can be used in corporate data centers. For example, it's one of the homes for designing and testing networking quality-of-service standards and practices that will improve Internet response time and reliability.

NERSC's specialty is managing large data sets. Its efforts are led by its Scientific Data Management Group, which has built a reputation for designing optimization techniques for accessing massive data sets in RAM, in cache or on disks.

BILL KRAMER: Swapping server systems is no simple matter

Gary Smaby, CEO of consultancy Smaby Group Inc. in Minneapolis, said NERSC has been recognized as the designer of the tools capable of handling terabytes of data. He added that dot-com companies are creating large data sets that are not unlike those at NERSC.

Napster Inc., for example, makes terabytes of music available on its Web site. "This would not have been imaginable without technology developed by researchers in government labs" such as NERSC, Smaby said.

Part of the U.S. Department of Energy's research and development operations, NERSC conducts unclassified, pure research in 14 disciplines, from particle physics to fluid turbulence.

This work demands superior computing tools. One simulation of turbulent flow generated 50GB of data during 38 hours of processing on 32 processors on NERSC's Cray T3E-90 supercomputer. But to achieve results similar to those of an experiment conducted in the real world, researchers would have to generate 25 terabytes (TB) of data and would require 340 days of processing on 512 processors. That's why NERSC is constantly upgrading its systems.

HORST SIMON: Data management tools will play a key role in research

Its current upgrade is a 512-processor cluster of IBM RS/6000 SP-3 servers in the first of a two-phase project to replace its Cray C-90 supercomputer.

When fully deployed, the IBM servers will have 2,048 computing CPUs, be housed in 45 cabinets, have 152 symmetric multiprocessor nodes and run at a blistering 3 trillion floating-point operations per second. The servers will also have 1TB of RAM and connect to more than 1 petabyte of online storage.

Bill Kramer, NERSC's department head for high-performance computing, said swapping out systems in any environment isn't a trivial matter. Before the transition to IBM's systems in the first phase of the project, NERSC ran benchmarks for the center's 14 research disciplines around-the-clock for 30 days to ensure the servers could handle the load.

Smaby said the demise of Cray Computer Corp., Sun Microsystems Inc.'s focus on commercial business and Silicon Graphics Inc.'s business problems have contributed to IBM's success at NERSC. "There aren't too many companies left with IBM's commitment to high-performance computers," he said. ▶

A Help Desk From Heaven

Getting good help desk people isn't difficult for Bill Kramer, the department head for high-performance computing at NERSC. Getting the best, however, can be tough.

To attract workers, NERSC, the Department of Energy's unclassified research arm at Lawrence Berkeley Labs, has to compete with scores of top-notch Silicon Valley companies and hundreds of dot-coms that are throwing money and stock options at candidates.

Kramer acknowledges that he has had to pay more for people, but he has gotten a bit more, too.

"Our user services staff have to know more than details about the systems they support. They have to know about the researcher's problem," Kramer said. That means he has to find computer scientists who are also conversant in a variety of disciplines, from genetics to fluid dynamics.

More than one-fourth of Kramer's user services staff hold doctorates in technical or scientific fields. That makes the staff members invaluable contributors in helping the researchers, who are spread across the U.S. in other government labs and universities.

– Mark Hall

YOU CALL THIS WORK?

MONTHS BEFORE MOST OF US SEE THE LATEST TECHNOLOGY, BUTLER GETS A PEEK AT THE REALLY INTERESTING STUFF.

IT LEADERSHIP is about using every opportunity—every technology—to reinforce your company's purpose. It's about defining business imperatives and driving the acquisition of the right technology. But the daily demands of running a company and an IT infrastructure don't always allow the time to get up to speed on the latest innovations.

As Director of the AMS Center for Advanced Technologies, Dr. Butler's missioo is to increase our understanding of emerging technologies. "Ours is a commitment to keeping AMS clients oo the frootier of IT practice," she says. "To address technologies that will fundamentally change the business landscape."

For example, her team's initial XML research yielded an intelligent agent that collects relevant information across multiple sources then synthesizes, categorizes and disseminates it based oo a user's specified interests. "Our Next Generation Enterprise and Business Intelligence & Knowledge Managemeot labs are collaborating now to evaluate emerging non-numeric mining tools," she proudly reports. "We'll be releasing the results soon."

And where does Dr. Butler gain her understanding of emerging technologies? From her peers, at conferences, from the Web and from *Computerworld*. The Newspaper for IT Leaders.

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Coming Soon: Easier-to-Use Software for the Disabled

BY SAMI LAIA

A law set to take effect this year is causing ripples of change in the forms and document-viewing software used by the government and the private sector.

On Aug. 7, an amendment to the Americans With Disabilities Act (ADA) becomes law, ordering that "information must be equally accessible, through technology, to both disabled and ondisabled federal employees and members of the public."

If software doesn't allow that access, the federal government can't buy it. That impending reality is sending software vendors scrambling to increase their accessibility features.

Later this month, JetForm Corp. in Ottawa plans to release server-based, form-creation software code-named Jaguar.

Adobe Systems Inc. in San Jose has announced that its Acrobat document-viewing software will support Microsoft Active Accessibility (MSAA), an application programming interface (API) that provides standard ways for software to plug into the Windows features used by assistive technology.

For example, the MSAA API exposes code so developers of assistive software can write applications that can work with or access or use most system-provided user interface elements, such as list boxes and buttons.

In developing MSAA, Microsoft has worked with the U.S. Department of Education's accessibility testing lab. Much of the language and standards of the new law were developed in the lab.

Building software to standards such as MSAA allows disabled customers to choose the assistive technology, such as screen readers or refreshable-Braille displays, that best suits them, said Douglas Wakefield, an IT accessibility specialist at the U.S. Architectural and Transportation Barriers Compliance Board in Washington.

Serving Basic Needs

In contrast, building assistive technology into the software forces vendors to choose the lowest common denominator of functions, which serve only the most basic needs, Wakefield said.

"I can't carry a wide doorway around with me," said Wakefield, who uses a wheelchair and is visually impaired, "but I can carry a screen reader of my choosing."

Forms created in JetForm's Jaguar will let users plug into MSAA, but "because ours is an open system, you could also use" proprietary assistive technology in any application, said Andrew Bridge, JetForm vice president of North American Government Operations.

Jaguar-built forms "put the intelligence on the Web server rather than on the desktop," as was the case with its predecessor, FormFlow 99, Bridge said.

Via any Web browser, users request one of the XML-based forms. Software on the server recognizes which browser the user is running and, in a few seconds, sends the user a version of the form compatible with his browser, said Bridge.

That puts technology decisions in the hands of users and lets form designers build a single version that will run on any platform, Bridge said.

To access Adobe's Portable Document Format (PDF) files with assistive technology, Adobe offers users a free on-the-fly conversion service at *http://access.adobe.com*. It converts PDF files, which screen readers can't follow, into HTML or plain text documents. The conversion approximates a single-column format, which visual-assist devices can decipher.

For creating interactive PDF forms in Acrobat that are accessible to people with disabilities, designers need the Adobe Acrobat Access 4.0 for Windows plug-in, which provides access to Windows screen-reading capabilities.

This year, the IRS used the Acrobat package to make interactive, online tax forms available on a CD to accountants and tax preparers, and downloadable free via the Web. The agency saved millions of dollars in mailing costs by using electronic forms, said an IRS spokeswoman.

Adobe didn't say when it will offer a downloadable demonstration of its technology for developing accessible interactive forms.

The technology works with the existing Acrobat 4.05 for Windows and uses the JavaScript TTS (text-to-speech) object, which renders machine text as digitally synthesized speech. To use the technology, users must have TTS engines on their PCs.

Form developers must also first download and install additional components, which are available at *http://access.adobe.com*.

The Microsoft Speech Application Programming Interface 4.0 software development kit includes a TTS engine. It can be downloaded for free at Microsoft's Web site. When a form created with this new technology is opened, saved, printed or closed, the document title is spoken, letting the user specify a file name and where to place the files.

Future releases of Acrobat will include native MSAA support, an Adobe spokeswoman said.

AT A GLANCE

New Software Helps Accessibility

- **Adobe Systems Inc.**'s Acrobat will support Microsoft Active Accessibility, an API that allows non-Microsoft applications to use features in Windows used by readers and other devices.
- **JetForm Corp.** plans XML-based server-based software that will download the appropriate form to a number of handicapped-accessible computing devices, making it easier for handicapped users to choose among assistive devices.

Just a reminder
that when it comes to B2B apps,
it's the software, baby.

The majority of top B2B sites are built on the Microsoft® Windows® DNA development platform.

Microsoft
Where do you want to go today?™
microsoft.com/dna

CLIP AND SAVE SO THAT YOU DON'T HAVE TO CARRY THE WHOLE MAGAZINE AROUND IN YOUR SHIRT POCKET JUST TO REMEMBER THIS ONE FASCINATING FACT.

ROBERT L. SCHEIER

Sex and the SAN

THERE. I'VE DONE IT; shamelessly used sex to get you to read a column about storage. And I'm not proud of myself. But I'm not the only one who feels a need to make this subject more, um, exciting. While at *Computerworld*'s Storage Networking World earlier this month, I was struck by how dowdy and unattractive storage networking seems at first blush — and by how exciting it really might be.

The basic story about disk drives and tape storage is that you can always buy more for less. That's a technical marvel but not hot news. The news, such as it is, is that storage has usually beeo "direct-attached" to a workstation or a server. Storage oetworking, the new trend, puts a bunch of disk and tape drives on a network so they can talk to one another. Breathtaking, eh?

As if that wereo't bad enough, the industry is stuck in the same types of arcane standards wars and technical arguments that hit the LAN industry in the late 1980s and the e-mail industry in the early '90s. (How many of you know whether it's good or bad to mask a LUN? Or when to choose an arbitrated loop vs. a switched fabric?)

ROBERT L. SCHEIER is *Computerworld*'s technology editor. Contact him at robert_scheier@computerworld.com.

But once vendors settled on standards and users learned how the technology could be put to work, LANs and e-mail became vital. I think networked storage, too, is going to be hot stuff within two years. Here's why:

It ain't the storage; it's the data. Storage, of course, exists only to store infrastructure software (operating systems, middleware, directories), business applications or data.

The core issue facing your organizations today is speed: That means fast, secure access to customer data, product data, pricing data, sales data, from both inside and outside your company. A scalable, secure storage management architecture woo't guarantee success, but the lack of one could sink you.

Disks are cheap; people are expensive. The fact that storage hardware is so cheap is what makes it so dangerous, because managing the data can cost 10 times more per megabyte than the storage hardware. Networked storage is already saving some pioneers money. Jerry Lynch, director of operations at the Online Computer Library Center, says he's seeo his mainframe data grow 900% while his costs have riseo only 42%, thanks in part to a storage-area network (SAN).

The data-storage problem will only get bigger. And it's not just e-commerce apps that are to blame. Hugh Ujhazy, director of strategic development at Ericsson IT Services, was among several customers who told of having to maintain several versions of huge ERP applications — one for production, one for development and one for test. Since moving from direct-attached storage to a SAN, he says he's cut his cost-per-megabyte by one-third — and he doesn't expect to add managemeot staff eveo as he doubles the data be has under storage.

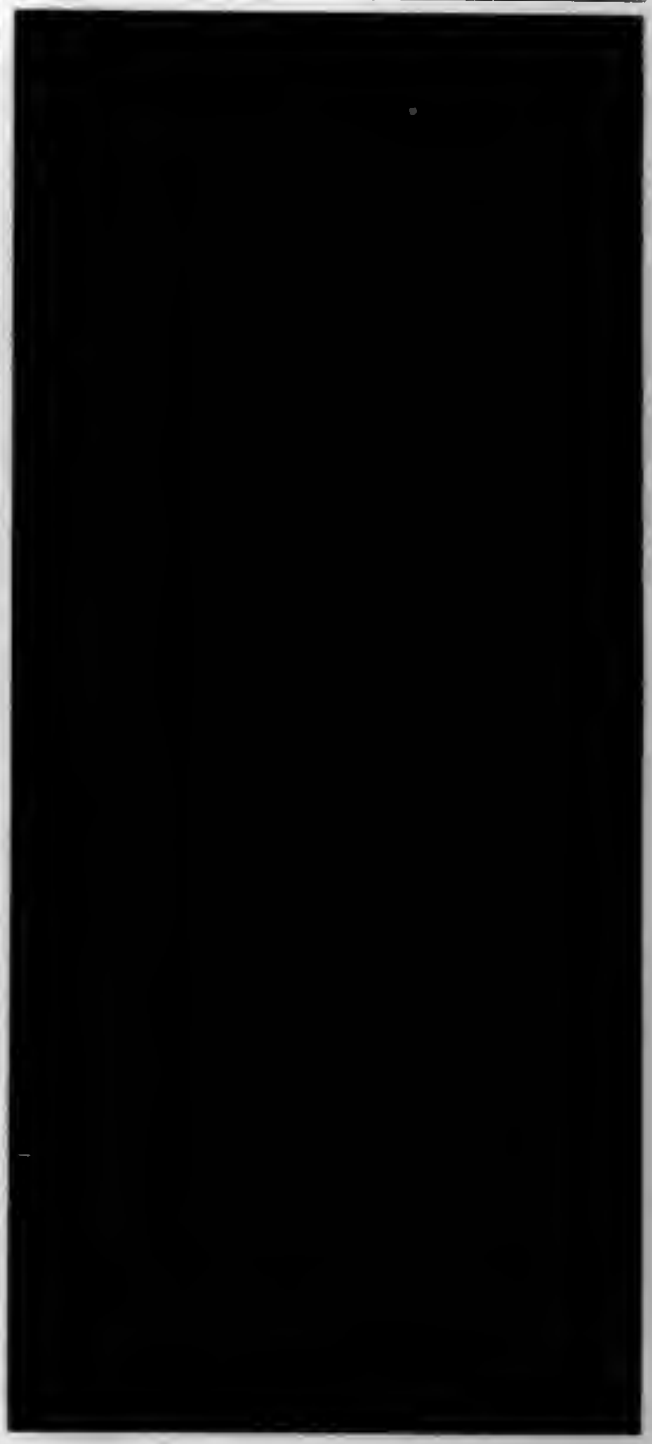
The magic is in the network. Just as vendors such as Cisco Systems Inc. built hardware and software to make systems oetworking possible, vendors such as Gadzoox Networks Inc. and HighGround Systems Inc. are developing hubs, switches and software for network storage devices.

The capabilities they're aiming at include highly granular security, where a certain class of users would be directed only to specific storage devices or quality-of-service offerings where the most critical transactions get routed to tbe fastest storage. All of which can help you adapt more quickly to the networked economy. Interested yet?

And the real magic is yet to come. Troika Networks Inc. and Hitachi Data Systems demoed a Fibre Channel SAN, which let them take almost all the storage-management load off the network servers, leaving more horsepower for the data mining app. The vendors claimed that they were able to scan a massively parallel cluster of DB2 servers on Windows NT at up to 1 millioo rows per second — 10 to 20 times what was possible with more conventional architectures. The Troika controller was able to detect, packet by packet, whether data was being transmitted using the SCSI or Virtual Interface protocols, routing it to the appropriate destination. That's the kind of selective service most mainstream corporate data networks doo't yet offer.

OK, maybe the caterpillar hasn't turned into a butterfly yet. The vendors and industry groups such as the Storage Networking Industry Associatioo may never solve a raft of technical, political and interoperability problems. IT managers may also balk at managing storage as a separate hunk of their infrastructure, along with their current oetwork and application management tasks.

But the big storage networking vendors (not to meotion some intriguing start-ops) are looking to bunt down and kill some really big business problems. Ignore them at your peril.



Linux, RealSecure Aren't That Easy

Week 8: Pat gets a lesson in ease of use from Linux and ISS's RealSecure; and CyberCop looks good, so far

I CONSIDER MYSELF pretty savvy when it comes to installing an operating system, especially Windows NT and even Linux. I can install Linux and get it running in 15 minutes, even though I don't have a clue what I'm supposed to do with it once it's running.

So here I am, getting ready for a big conference next week. Some of the classes I'll attend require a laptop with Linux and some require Microsoft Corp.'s Windows NT Server. Well, I once installed Red Hat Inc.'s Linux 6.1 on top of an NT Server configuration on a workstation. With the new graphical user interface, I felt it would be just as simple on the laptop. Not so. After four installs of NT Server and eight of Linux, I gave up and decided to borrow another hard drive, putting Windows 98 and NT on one drive and Linux on the other.

Security Manager's Journal

There are a number of issues I need to deal with while I prepare for this trip.

No. 1, I want to get the password policy-change date set. We've already pushed policy change back once, and I don't want the help desk workers to push it back again just because they don't want to deal with all the calls the new policy will create. Under the new policy, passwords must be nine characters long and must not contain any whole words. Also, the expiration period will be cut from 90 days to 45, and everyone will have an expiring password — no more permanent ones.

The Password Dead Horse

Of course, this will raise all kinds of hell with the sales force. But we administrators can make salespeople's jobs only so easy before we start making our jobs harder and compromise corporate security. Am I thankful that they bring in my paycheck every week? You bet. But we wouldn't have those paychecks if a cracker or corporate spy dropped our payroll server or corrupted the database. Besides publishing the password policy, I copied a document on how to select a good password. You would be surprised what kind of passwords people choose. Is this beating a dead horse? No, because passwords are still the No. 1 problem when it comes to compromised networks.

As I've said before, if you are willing to share your security policy with me, I agree not to release it. I want to do a little study and see who has the best policy.

I work for a textiles company dealing with dresses, jeans and suits and fabrics. Our security standards can be looser than those of a banking institution, government agency or brokerage firm. This isn't to say that security isn't important; it is to say that we don't need to encrypt e-mail. We might use a virtual private network, but we might not need to implement a $250,000 RSA Security Inc. SecurID system (a user authentication system that protects networks, operating systems and other elements of the information technology infrastructure from intruders).

Joe Blow's Security

Now some of you may disagree with our security standards, but think about this: To secure the network the way I want, I would have to go to the board of directors — a family that has been running the business for more than 40 years — and tell them that we need to spend close to $1 million. Their first question would be: "How will it improve productivity and increase revenue?" With a network upgrade such as going from CAT3 cabling to CAT5, I can tell them that performance will increase significantly in a 100M-bit switched environment with a gigabit backbone. My network doesn't need to be as secure as Visa International Inc.'s, but it needs to be more secure than Joe Blow's family vacation site.

Moving right along: I've been discussing the testing of an intrusion detection system, mainly for our internal network. When I last broached the subject, I spoke about Internet Security Systems Inc.'s (ISS) RealSecure and Network Ice Corp.'s IcePac suite. Through all the growth and change ISS has undergone, the company has disappointed me with the quality of its service and customer care. In order to do anything, you need an encrypted authentication key, and then you need to know how all the keys work when they create directories for holding them on your hard drive.

I don't have the time or patience to go through this hoopla just to get a test product working. I even had a sales rep and tech rep out here to demonstrate the product and get it to work for me. After two hours, they finally decided to install the product; an hour later, they still couldn't get it to work. After they did, we were only interested in the host detection, being in a switched environment.

Take That, Hacker

Enter Network Associates Inc.'s CyberCop suite. Now this thing really won my boss over, so we will test this product in two weeks upon my return. The rep was very nice and brought us a quote that was both timely and easy on the pocketbook — $7,800 for the entire suite. The representatives came in and talked for 15 minutes and then let the product speak for itself. Imagine a hacker defacing your Web site. CyberCop automatically replaces the defaced Web site with a cached backup and stores the defaced Web page for you.

The last item of business before I leave is Windows 2000 Server, which I have been running for about two months. I haven't been too impressed, but I haven't really tried all the features.

We had a meeting this week on the design of our domain structure when we migrate to Windows 2000 in July. One of the items that came up was Terminal Services (Microsoft's software for running thin-client applications), which comes with 2000 Server. I decided to take a look at it since I'm going to be away for 10 days.

It was extremely easy. I told 2000 Server that only my user account could remotely log in to this computer. Then I created a rule on the firewall allowing the Terminal Services (TS) ports from my internal address and to my external address with secure authentication. So first the firewall authenticated me and then it allowed me to fire up the TS client and an added layer of protection. I took the client diskettes and loaded them on my laptop and dialed a local Internet service provider. When I logged in after launching the TS client, I was greeted with a familiar desktop, my local profile and all my icons, exactly where they were when I logged off.

Very cool, I say, because this gives me the ability to administer the firewall and pretty much everything from anywhere. Granted, with this newfound flexibility comes added risk, and with added risk you need added protection.

So until next week, I will be away at SANS2000 in Orlando for the class of a lifetime. ◗

■ This journal is written by a real security engineer, whose name and employer have been disguised for obvious reasons. It's posted weekly at www.computerworld.com and at www.sans.org to help you and our security manager — let's call him Pat — better solve security problems. Contact Pat with comments or advice at pat_rabbinski@hushmail.com, using "Pat's Journal" in the subject line.

THIS WEEK'S GLOSSARY

Authentication key: Code used by an algorithm to confirm the identity of a user on a system.

CAT3, CAT5: Category 3 and Category 5, which are types of network cabling. CAT3 can carry up to 16M bit/sec. of data. CAT5 can carry up to 100M bit/sec.

Domain structure: Domains are lists of users, resources or devices that an operating system controls. The domain structure is how those users, resources or devices are organized.

Gigabit backbone: A backbone is the part of a network that handles the largest amount of traffic. A gigabit backbone can carry 1 billion bit/sec. of data.

Host detection: The ability to detect the presence of a host computer that provides data or application services to other computers.

LINKS:

www.nai.com/asp_set/anti_virus/covert/intro.asp: Network Associates Inc.'s CyberCop Security Vulnerability Center, which is located at the Web site's Research Center.

www.computerworld.com/home/features.nsf/all/990222wy2k links: An array of Windows 2000 links, including articles, white papers, newsletters and the Microsoft Windows 2000 Server page.

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Viruses, Worms, Trojan Horses and Zombies

DEFINITION:

Malicious software: Any software written to cause damage to or use up the resources of a target computer. Malicious software is frequently concealed within or masquerades as legitimate software. In some cases, it spreads itself to other computers via e-mail or infected floppy disks. Types of malicious software include viruses, Trojan horses, worms and hidden software for launching denial-of-service attacks.

BY STEVE ALEXANDER

FEW ASPECTS OF computer security have achieved the notoriety of malicious software that preys on unsuspecting computer users. Viruses, worms, Trojan horses, logic bombs, zombies, password grabbers — the list gets longer and longer. The different types of malicious software work by a variety of methods, and they have different potentials for causing damage.

The Chernobyl and Melissa viruses and the Worm.Explore.Zip program caused extensive PC damage after spreading themselves around the world through e-mail last year. The denial-of-service attacks that brought major e-commerce Web sites to their knees earlier this year were launched by malicious software hidden on hundreds of Internet-connected computers without their owners' knowledge.

A mini-industry of organizations, professionals and volunteers has sprung up to categorize malicious software, issue warnings and market software designed to detect, locate and eradicate such programs. New malicious code appears monthly, generated by an underground community of programmers apparently motivated by the desire to cause damage, steal information or sometimes just prove their technical prowess.

Viral Threats

Viruses are the best-known type of malicious software. These programs secretly attach themselves to other programs. What makes them dangerous is that, before they do whatever damage they may be programmed for, they first copy themselves to additional program files. Thus, computer viruses infect and reproduce in a fashion somewhat analogous to biological viruses.

The scope of the threat has changed significantly in the past few years, says Sal Viveros, director of McAfee Active Virus Defense at Network Associates Inc., a Santa Clara, Calif.-based vendor that develops programs to protect against malicious software.

"Five or six years ago, viruses were spread by floppies," Viveros says. "They were called boot-sector viruses because they booted off the floppy drive. At that time, virus infections were very regional; they spread, but [they] took longer than they do today.

"Theo came the applications with macros — programs like Microsoft Outlook or Word — that attracted a huge number of macro viruses," he adds.

"Last year came Melissa and the other mass-mailing e-mail viruses," Viveros ootes. "And at the eod of last year there was a virus called BubbleBoy that you could get just by opening your e-mail because it used the Visual Basic scripting language in the e-mail."

Viruses are still the biggest computer security problem. According to The WildList Organization International, an independent group that tracks viruses, there are more than 300 viruses "in the wild" that represent a threat to computer users. That's only a fractioo of the 50,000 known malicious software codes, Viveros says.

Symantec Corp. in Cupertino, Calif., another veodor of antivirus software, sees copies of about 15 new viruses a day, although most are never released, says Vinceot Weafer, director of Symantec's Antivirus Research Center in Santa Monica, Calif.

Peaks in new virus production occur in the fall and after the winter holidays — dates that coincide with the end of college vacations, wheo young programmers have had time to develop new viruses, according to Weafer.

Macro viruses, which are triggered by automated tasks within programs such as Microsoft Word, are today's biggest threat. Last month, they accounted for nine of the top 15 viruses, Viveros says. There are also some complex variations such as polymorphic and stealth viruses, which try to avoid detection by changing their internal structure, he says.

Other Malefactors

In addition to viruses, there is a growing threat from other types of malicious software, including Trojan horses, worms and denial-of-service attacks, Viveros says. And hostile Java applets are an emerging threat.

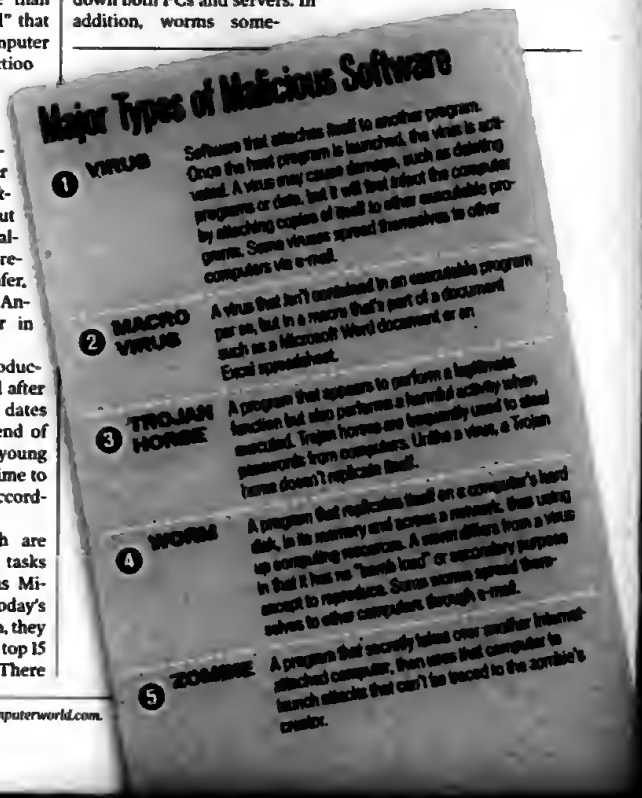
A Trojan horse, like its mythological namesake, is a program that appears legitimate but contains a second, hidden function that may cause damage. A commoo type of Trojan horse is often distributed by e-mail with the aim of stealing passwords from a victim's computer and then e-mailing the stolen data to an anonymous recipient.

Worms use up computer resources such as memory and network bandwidth, slowing down both PCs and servers. In addition, worms sometimes delete data and spread rapidly via e-mail.

In denial-of-service attacks, specific Web sites are overwhelmed by an intentional onslaught of Internet traffic. Such attacks rely on launching programs, sometimes called zombies, that have previously been hidden on hundreds of Internet-connected computers that belong to unsuspecting third parties such as universities, Weafer says.

Hostile Java applets steal informatioo from or cause damage to the computers of users who visit hostile Web sites. Victims may be tricked into visiting the sites when they click on links they receive via e-mail, Viveros says. Although they aren't yet a major problem, hostile applets "are the next big threat," he says.

Alexander is a freelance writer in Minneapolis. Contact him at sorion99@yahoo.com.



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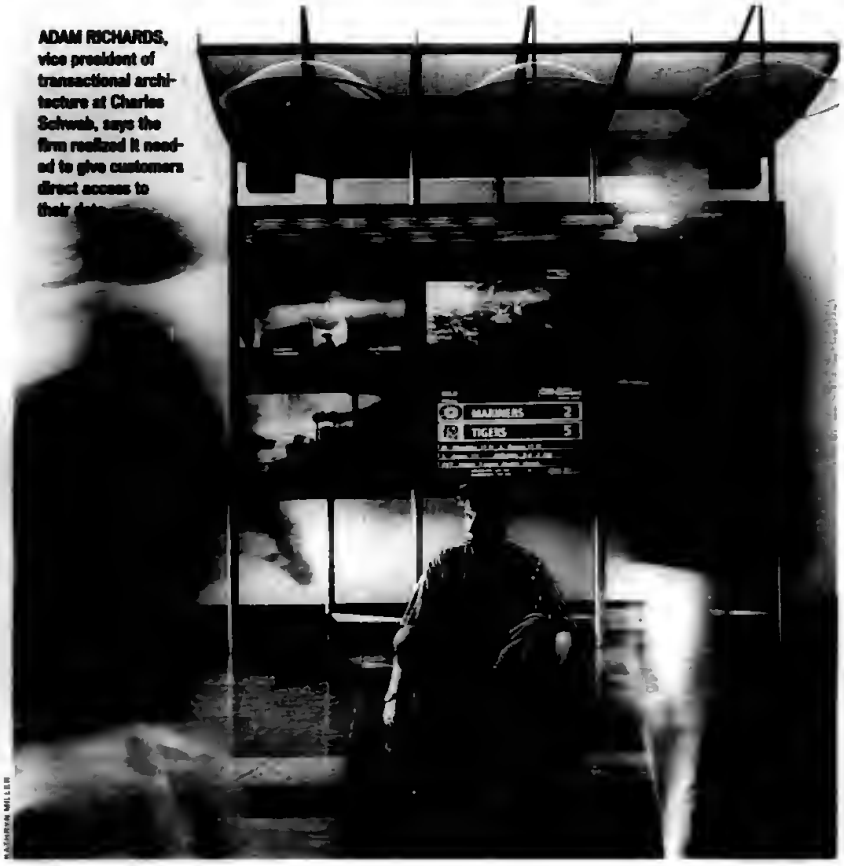

ADAM RICHARDS, vice president of transactional architecture at Charles Schwab, says the firm realized it needed to give customers direct access to their data.

KATHRYN MILLER

MOVING COBOL TO THE WEB

COBOL. A SIMPLE LANGUAGE that's so easy to read, it's impossible to hide malicious programs. A language for mainframe data locked securely behind tried-and-tested access controls like the Resource Access Control Facility (RACF), Top Secret and ACF2. But that's all changing, now that brick-and-mortar companies are linking online customers and suppliers to their own account information stored in the mainframe.

To do so, companies are writing elegant middleware code to make the language of the mainframe (Cobol) talk to the language of the Web (HTML). But in so doing, businesses are stripping away the decades-old security mechanisms inherent in Cobol and mainframe access controls.

They're taking Cobol, which is secure by virtue of its simplicity, and wrapping it around or translating it into C, C++, Perl and Java. Then they're pushing and pulling this data to a Common Gateway Interface translation server with less-secure operating systems.

If done incorrectly, these new legacy-to-Web system efforts could, by virtue of this added complexity, inadvertently allow unauthorized viewing of the converted data or glimpses into previously protected areas of the mainframe itself.

"If you take something that's historically in a glass house and then open it up without a security plan in place, you've opened all that data up to the Internet," says Chuck Townsend, president of LegacyJ Corp., a Cobol conversion software and services vendor in Pleasanton, Calif.

The problem is twofold, says Edmund C. Arranga, editor of weekly online newsletter CobolReport.com in Orinda, Calif. First, businesses are putting this data on a middleware server with less-secure operating systems and access controls.

"The overriding issues are often found at the operating system level itself," Arranga explains. "You have so many break-ins on the NT boxes, and compa-

OL -SAFELY

As they move more of their business online, companies are stripping away security mechanisms inherent in Cobol and mainframe access controls.
By Deborah Radcliff

Guess what, corporations: You've given up security if you put your secure applications on the Internet.

PAMELA COKER, CEO, ACUCORP

nies don't have time to patch or are even unaware of the vulnerabilities. Unix is less of a security threat. But it really all depends on the underlying architecture designed to protect their assets."

The other security issue resides in the middleware programming layer, he continues. Checking code for malicious programs is easy in Cobol. But Perl, C++ and even Java are great hiding places for malicious code because they're more complicated to read.

"You're introducing a lot more potential for problems and errors because you're now introducing additional accidental complexity," Arranga says, paraphrasing Fred Brooks, the father of the IBM 360 mainframe operating system. "To make sure this new middleware program is tasked in a well-defined manner, the system manager must read very complex strings of symbols, numbers and characters. [The process is] very error-prone."

Different Strokes

That's why no two legacy-to-Web applications look the same. Nor should they. According to Arranga and other analysts, businesses with compelling reasons to open their legacy systems to the Web should build their infrastructure with minimum access in mind.

Some organizations, such as Minneapolis-based Lutheran Brotherhood, an insurance and investment association for Lutherans, won't open their legacy applications to customers. The company has Web-enabled many of its applications so that its district insurance officers can look up customer information and access forms online. Others, such as San Francisco-based Charles Schwab & Co.'s eSchwab Web site, must meet customer expectations for live trades through real-time access to their legacy systems if they don't want to lose business to competitors.

And then there are those that fall somewhere in between, such as Erie, Pa.-based food distributor C. A. Curtze and Co., which refreshes legacy data on the middleware server hourly instead of allowing direct Web access into its legacy system.

ESchwab Giving It All Up

With the advent of online trading firms such as ETrade Group Inc. in Palo Alto, Calif., pushing into its territory, Schwab was compelled four years ago to build a real-time trading service for customers who were demanding Web trading. When Charles Schwab, the company's co-CEO and chairman, first saw a demonstration of customer transactions that let browser users call up legacy data, he issued an edict to build such a system in a scant three months.

"For a long time, our back-office systems ran on IBM MVS, with a security system equivalent to IBM's RACF. It was very robust in terms of access controls and privileges," says Adam Richards, vice president of transactional architecture at Schwab. "When we planned to go on the Internet, we realized we couldn't do what a lot of companies do — put up a storefront without any real access to the business systems at our firm. Our customers needed direct access to their data to perform an action on their assets in real time." At the time, Schwab had already built new screens to represent mainframe data in a new

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Security Trouble Spots

Operating system security
Pushing or pulling data from tightly controlled mainframes to Windows NT-, Unix- or Linux-based servers with known operating system vulnerabilities is risky.

Middleware programming language
Translating the "unhackable" Cobol into complex languages such as C, C++, Perl or Java makes it difficult to find coding errors and easier to hide malicious code.

Links to legacy system
Vulnerable middleware servers and programs could be exploited to see plain-text data stored in the legacy system itself.

Basic Security Advice

- **Keep it simple.**
- **Tightly secure your Web and middleware servers.**
- **Keep up-to-date on operating system vulnerabilities and patches.** (See *www.mitre.org* for a growing cross-indexed list of common vulnerabilities and exposures.)
- **Layer security mechanisms and access controls.**
- **Audit converted code**; inspect it even more closely if it's been converted by a third party.
- If your Web servers are outsourced, **work with an Internet service provider or application service provider** that has a proven track record in security.

Cobol-to-Web Translation Tools and Services

- **Acucorp Inc.'s Acucobol**
  www.acucorp.com
- **Ardent Software Inc.'s RedBack**
  (being acquired by Informix Corp.)
  www.ardent.com
- **LegacyJ Corp.'s PERCobol**
  www.legacyj.com
- **Neon Systems Inc.'s Shadow**
  www.neonsys.com
- **Oracle Corp.'s WebDB**
  www.oracle.com
- **Recital Corp.'s Internet Developer**
  www.recital.com
- **Seagull Software Systems Inc.'s WinJa, JWalk, GUI/4000**
  www.seagullsw.com

MOVING COBOL TO THE WEB – SAFELY

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client/server environment. So all the company needed to do was build Web graphical user interfaces, port those screens to the Web servers and "glue" the Web servers together with the legacy data through a cluster of high-speed middleware servers.

It was in this middleware layer that Schwab had the most work to do. At the time, the middleware worked only with SNA, an IBM mainframe architecture. The Web uses Internet Protocol.

"You have to take a Web request coming in IP and translate it into an SNA request, then take the SNA response and turn it into IP to drive the browser," Richards explains.

The first security policy was to keep the new applications as simple as possible.

"You can do a lot of things in C++ that look elegant but aren't good for security," Richards says. In the Schwab environment, Web-based customer applications are limited to functional requests, such as balance inquiries or transferring money between accounts. This limit both restricts the user to his own account field and prevents accidental or purposeful overflow into other areas of the legacy system.

To enforce these access functions, eSchwab relies on a second firewall inside the server cluster that authenticates a user's privileges and puts a security-object cookie on the user's browser to flow along with his actions and grant or deny access based on the privileges in that object.

"A customer could completely muck up the presentation of his own account information but couldn't gain access to some other account [that] he's not authorized to access," Richards says.

Because traditional mainframe security can't scale to millions of users coming from the Web, Richards says he feels this is currently the best large-scale addition for the tried-and-tested IBM mainframe access controls and privilege lists.

Balancing Act

But traditional IBM mainframe RACF controls still rule at Blue Cross/Blue Shield of Chattanooga. In the insurer's Cobol-to-Web extranet application, medical providers access claims, eligibility and client coverage with their browsers.

Because of the sensitive nature of this material, providers that use this application must pass two authentications, first by providing a digital certificate to the Web server and then at the mainframe itself, which grants or denies access based on predefined criteria in RACF.

"It's a bit cumbersome," says Wayne Wilson, senior manager of e-commerce and government systems at Blue Cross/Blue Shield of Chattanooga. "We've been trying to limit the number of customer sign-ons, but we need both levels of security here."

RACF also still rules at Lutheran Brotherhood. Ron Starzinski, lead information security analyst at Lutheran Brotherhood, says he's well aware of the security problems when converting Cobol into or wrapping it around C++ or other more complicated languages. Thus, along with careful planning and testing of middleware code, he also adds an extra ounce of prevention — RACF access controls.

"It's an unusual architecture. The way our middleware is constructed, we actually utilized [Secure Sockets Layer] browser encryption to our mainframe access-control mechanism," Starzinski says. "We then use our allow/disallow functionality to prohibit or allow access to application resources on the mainframe."

Because this dual-authentication architecture doesn't work on a larger scale, Lutheran Brotherhood's legacy-to-Web applications are limited to corporate intranet users such as district insurance managers. And, as at Blue Cross/Blue Shield, opening up Cobol applications to the public won't happen anytime soon, Starzinski says. "We want to make sure that people who are accessing legacy applications off the Web don't at the same time have access to other application resources, such as our restricted internal applications," Starzinski explains. "We've just addressed this in a test with server-side certificates."

But the client side presents the dilemma. Not only will RACF prove problematic in terms of scaling, but so too will certificates.

"If we wanted to expand our network, we would have to issue 20,000 certificates to authenticate our insured," he says. "It will likely take two to five years to accommodate low-level certificates like this."

Issues such as these are also holding up similar Web-based customer service deployments for the $140 million C. A. Curtze.

Scaling Problems

Tony Darden, a Curtze programmer, began dabbling with Cobol-to-Web conversion tools two years ago. He decided to start his own Cobol-to-Web conversion consulting business, SalesPro Technologies Inc., also in Erie. Under that consulting name, Darden built a Web-based order network now used among Curtze's in-house and outside sales representatives.

"Now we have to make this Web-accessible to our customers," he says. Already, he has figured out that it's more secure to keep the customer data in Cobol, so Darden is experimenting with a Web browser plug-in offered by Acucorp Inc. in San Diego.

"Once the plug-in is enabled, customers can visit the distributor's Web site, click the order-entry link, and up pops an actual Cobol object running inside the browser," he says. "You can incorporate your HTML elements inside the object, but the logic that supports it all is Cobol. Without the plug-in, the object won't execute, and the data won't make sense."

The other advantage of Curtze's system: The customer has no direct connection to the back-end legacy system because the Cobol object is transported from the middleware server (which is refreshed hourly) to the customer's browser. "That object is what the customer sees," says Darden. "There is no data they can get to on the legacy system, only data on the Web server based on permissions from the log-in screen."

Darden, like other IT managers working on Cobol-to-Web conversions, has reason to be paranoid, what with 273 organizations citing nearly $266 million in financial losses as a result of computer crime last year, according to a March report by the FBI and the Computer Security Institute in San Francisco.

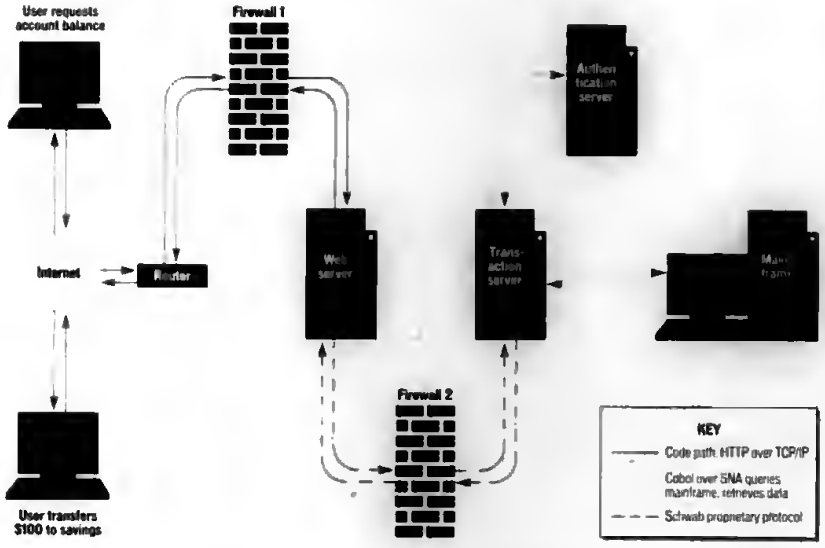
Thus, no system that pulls legacy data to the Web should go live without having security built into the planning and development of the e-commerce build-out itself, explains Pamela Coker, CEO of Acucorp.

"People think, All of a sudden, we should be secure in an environment that's inherently unsecured," she says of the Internet. "Guess what, corporations: You've given up security if you put your secure applications on the Internet. If you put your secure applications on the Internet, you'd better put [them] back on lease lines, where you have some control." ◗

Radcliff is a Computerworld contributor in Northern California. Contact her at DeRad@aol.com.

One Company's Security Strategy

In order to provide a real-time trading service, Charles Schwab was faced with the need to give its customers direct Internet access to critical data on its mainframe computers. The diagram below outlines Schwab's approach, which relies on dual firewalls and extra authentication functions within the middleware server.



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But traditional IBM mainframe RACF controls still rule at Blue Cross/Blue Shield of Chattanooga. In the insurer's Cobol-to-Web extranet application, medical providers access claims, eligibility and client coverage with their browsers.

Because of the sensitive nature of this material, providers that use this application must pass two authentications, first by providing a digital certificate to the Web server and then at the mainframe itself, which grants or denies access based on predefined criteria in RACF.

"It's a bit cumbersome," says Wayne Wilson, senior manager of e-commerce and government systems at Blue Cross/Blue Shield of Chattanooga. "We've been trying to limit the number of customer sign-ons, but we need both levels of security here."

RACF also still rules at Lutheran Brotherhood. Ron Starzinski, lead information security analyst at Lutheran Brotherhood, says he's well aware of the security problems when converting Cobol into or wrapping it around C++ or other more complicated languages. Thus, along with careful planning and testing of middleware code, he also adds an extra ounce of prevention — RACF access controls.

"It's an unusual architecture. The way our middleware is constructed, we actually utilized [Secure Sockets Layer] browser encryption to our mainframe access-control mechanism," Starzinski says. "We then use our allow/disallow functionality to prohibit or allow access to application resources on the mainframe."

Because this dual-authentication architecture doesn't work on a larger scale, Lutheran Brotherhood's legacy-to-Web applications are limited to corporate intranet users such as district insurance managers. And, as at Blue Cross/Blue Shield, opening up Cobol applications to the public won't happen anytime soon, Starzinski says. "We want to make sure that people who are accessing legacy applications off the Web don't at the same time have access to other application resources, such as our restricted internal applications," Starzinski explains. "We've just addressed this in a test with server-side certificates."

But the client side presents the dilemma. Not only will RACF prove problematic in terms of scaling, but so too will certificates.

"If we wanted to expand our network, we would have to issue 20,000 certificates to authenticate our insured," he says. "It will likely take two to five years to accommodate low-level certificates like this."

Issues such as these are also holding up similar Web-based customer service deployments for the $140 million C. A. Curtze.

Scaling Problems

Tony Darden, a Curtze programmer, began dabbling with Cobol-to-Web conversion tools two years ago. He decided to start his own Cobol-to-Web conversion consulting business, SalesPro Technologies Inc., also in Erie. Under that consulting name, Darden built a Web-based order network now used among Curtze's in-house and outside sales representatives.

"Now we have to make this Web-accessible to our customers," he says. Already, he has figured out that it's more secure to keep the customer data in Cobol, so Darden is experimenting with a Web browser plug-in offered by Acucorp Inc. in San Diego.

"Once the plug-in is enabled, customers can visit the distributor's Web site, click the order-entry link, and up pops an actual Cobol object running inside the browser," he says. "You can incorporate your HTML elements inside the object, but the logic that supports it all is Cobol. Without the plug-in, the object won't execute, and the data won't make sense."

The other advantage of Curtze's system: The customer has no direct connection to the back-end legacy system because the Cobol object is transported from the middleware server (which is refreshed hourly) to the customer's browser. "That object is what the customer sees," says Darden. "There is no data they can get to on the legacy system, only data on the Web server based on permissions from the log-in screen."

Darden, like other IT managers working on Cobol-to-Web conversions, has reason to be paranoid, what with 273 organizations citing nearly $266 million in financial losses as a result of computer crime last year, according to a March report by the FBI and the Computer Security Institute in San Francisco.

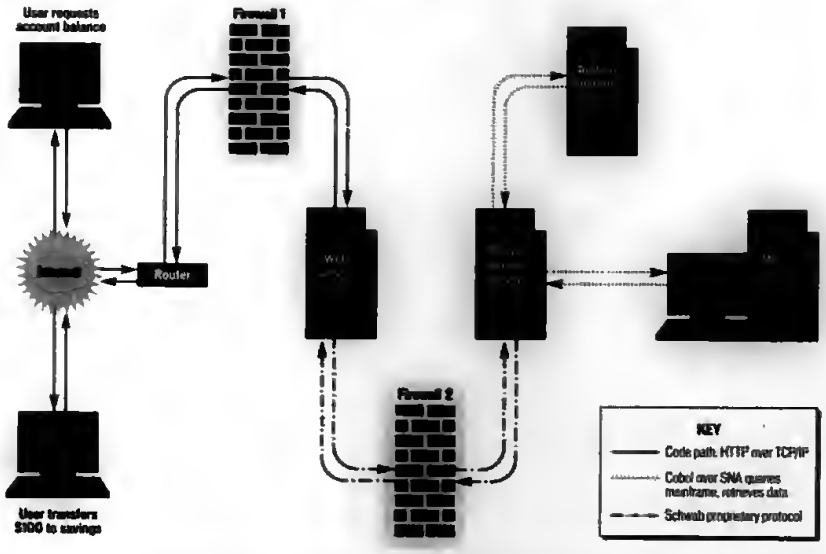
Thus, no system that pulls legacy data to the Web should go live without having security built into the planning and development of the e-commerce build-out itself, explains Pamela Coker, CEO of Acucorp.

"People think, All of a sudden, we should be secure in an environment that's inherently unsecured," she says of the Internet. "Guess what, corporations: You've given up security if you put your secure applications on the Internet. If you put your secure applications on the Internet, you'd better put [them] back on lease lines, where you have some control."

Radcliff is a Computerworld contributor in Northern California. Contact her at DeRad@aol.com.

One Company's Security Strategy

In order to provide a real-time trading service, Charles Schwab was faced with the need to give its customers direct Internet access to critical data on its mainframe computers. The diagram below outlines Schwab's approach, which relies on dual firewalls and extra authentication functions within the middleware server.



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WORKING TO A NEW STAN

Prudential bases global IT operations on the emerging Common Information Model. By Sami Lais

ON A WORKDAY MORNING at a command ceoter monitoring and controlling information systems for a global corporation, you'd expect hustle-bustle, barked commands, some flashing lights and maybe even the peep, peep, peep of an alarm.

Instead, the softly lit amphitheater of the Operations Control Center (OCC) at The Prudential Insurance Company of America is nearly empty. Three or four technicians sit in generously proportioned chairs, looking at big monitors and speaking quietly into their telephone headsets. Across the room, two or three men stand, coffee mugs in hand, apparently discussing something they're watching oo a monitor.

This handful of engineers in the Roseland, N.J., OCC is monitoring and controlling Prudential's call centers, three data centers, 15 OS/390s and nearly 75,000 desktops at 1,466 sites worldwide.

Five years ago, information technology managers at Newark, N.J.-based Prudential saw their systems mushrooming and projected that growth into a future in which they would be overwhelmed and the business units that depended on them would grind to a halt.

"I figured out that to manage systems just for one of the data centers, you'd need to watch 18 separate consoles," says Kenneth Tyminski, vice president of information services at Prudential's Corporate Technology Services. "An alarm could flash across the screen, and unless you happened to be watching that monitor at that moment, you'd miss it."

What was needed was a way to see the status of all systems in real time, in a format that was easy to read and that offered great detail, all on a single console, be says.

Tyminski and Arun Kant, vice president of enterprise systems management at Prudential's Corporate Technology Services, saw a way to build such a porthole. They worked with a small software developer, Accessible Software Inc. in Parsippany, N.J, which this year was bought by IBM subsidiary Tivoli Systems Inc. in Austin, Texas.

Their plan included integrating Commoo Information Model (CIM) into Accessible's monitoring-data correlatioo and report software, Access 1.

CIM? What's That?

CIM was barely a concept at the time, and no hardware or software yet supported it. "At the time, people were saying, 'What's CIM?' " Tyminski says. "We had to do something about managing our systems right away; we couldn't wait for CIM," he says. "But we looked at [how Simple Network Management Protocol (SNMP) standards had changed network managemeot], and we wanted to be ready to take advantage of CIM wheo it became available."

Nearly all network hardware and software support SNMP standards. SNMP agents oo network devices collect data on device activity and report managemeot data to network management systems via Management Information Base. Use of the standard lets devices from different vendors interoperate out of the box.

CIM extends that interoperability and control. The standard is a set of schemata for describing management data for applications, devices, services and the relationships among them as an object.

If CIM were as commonly supported as SNMP, systems managers could add applications, devices and services and change relationships to reflect busioess processes, and their systems would automatically recognize and be able to manage each as an object.

In the past five years, engineers at Prudential, Accessible and enterprise management software vendor Tivoli have worked to evolve Prudential's management systems with an eye to standards of the future. For example, CIM relies on a common repository of definitions used by all CIM objects. A change to a definition in the repository

USING CIM [illegible] Tyminski [illegible] devised a way to manage information systems worldwide

DARD

is automatically reflected in each object throughout the system. Prudential designed its systems architecture on that model.

Even before CIM was issued as a standard by the Distributed Management Task Force (DMTF), vendors such as Cisco Systems Inc. in San Jose built some CIM functionality into network hardware. Some software vendors, including Tivoli in its Enterprise framework software, which Prudential uses, and Microsoft Corp. in Windows 2000 and Windows Management Infrastructure, have built on CIM standards.

"With CIM, new applications, new devices [that are CIM-enabled] will just snap into our" monitoring system, helping to make operating the OCC "even more efficient and proactive," Tyminski says.

"It's already making a difference," he says. "We collect all this information on the infrastructure, the applications, the network. CIM allows us to use the information in a different way."

He adds: "Business units used to just want to know whether their applications were up or were they down, are they available or not? Now they want to know what's happening with them. If it's slow, what transactions are slowing it down, how is it being fixed, and when is it going to be available again?

Not a lot of time was devoted to planning. The development "process depends on a feedback loop. We do something, then see how it's working and . . . tweak the process," he says.

During the "tweaking," when the system wasn't yet working, getting high-level executive support was even more critical than initial buy-in, Tyminski says.

Implementation of the new system began in 1998 when the OCC went live. System outages were cut by 31% last year. Downtime — planned or resulting from unavailable applications, for example — was reduced by 38%, and the mean time to repair problems in the systems infrastructure was cut by 55%, Tyminski says.

"But the best part is we've been able to do it proactively," he says. "You have to remember that it's not just about the tools. It's about the right process and a lot of people making it work. Once you have that, you fill in with the tools to support the process."

More Work, Fewer People

Tyminski leads a tour of the OCC, pointing out technicians in charge of NT servers, Web servers, DB2 and CICS applications. And at the far back, overseeing it all, sit the problem managers.

When a situation can't be resolved quickly, a problem manager takes over, coordinating personnel from various engineering groups.

On a recent Friday morning, two problem managers were on duty, although only one sat monitoring a screen.

The OCC is staffed around the clock by 107 people, deployed over three shifts, Kant says. "Three years ago, we probably had about 160. Now, at peak times, there are maybe 35 on duty," he says. Usually, there are only about 10 or 15 people on duty at a time.

What makes it possible to manage such large systems with such a small staff is the Access 1 software, renamed Tivoli Manager for OS/390. "It's misnamed," Tyminski says of the product, because although "it may have started out for OS/390, we manage Windows, Unix, our call centers, all kinds of things with it."

Plain English

Kant and Tyminski walk through a demonstration on a live screen.

Each business unit's icons are linked to a series of icons representing all the applications, devices, services and networks supporting that line of business.

A red arrow pops up on an icon, and Kant clicks to drill down to see where the problem is. The red arrow is on the NT server icon. Another click brings up another layer, another red arrow. One more click exposes another layer but no red arrow, indicating that the problem lies in the layer above, which is a CPU in Scottsdale. A window at the bottom of the screen reads — in plain English, not in the language and syntax of the monitoring application — that a network connection is down.

Converting alert messages into English was one of the most difficult hurdles, Kant says. Not only were similar events reported differently in different monitoring applications and different platforms, he says, but language familiar to the IT engineers was unfamiliar to the systems management engineers.

"We had to make the languages for error messages and conditions the same whether it was for a Cisco device or a laptop or anything on the network," Kant says.

Kant's group has written about half the rules, mapping definitions from each application to a definition in a common repository, with help from Accessible (now Tivoli) to write the rest.

"We had to come up with a common library so that all fault analyses would come up the same, and we wouldn't have to write different rules, set different thresholds for each [application]," he says.

The Directory-Enabled Networking standard, expected this year from the DMTF for CIM, works on just such a library, or repository, as that built by Prudential.

"CIM is going to be indispensable in the e-business environment," Kant says. For example, "you can go to our Web site and do several things. You can see information on different mutual funds or you can see how your mutual funds are doing," he says.

"Now when [users try to] access information and there's a failure, they get a message saying, 'Page not found.' They call the help desk, and that [error message] is not very helpful in tracking down the failure," he says. "Because all we know is there's been a content failure; we don't know which application is responsible. Or it may not be an application failure. There may have been a lot of hits all at once, and the server is timed out. Or a load balancer may have gone bad or routed [the request] to the wrong content."

The arrow is still red, and Tyminski clears his throat and raises his voice slightly. "Are we aware of this connection down in Scottsdale?" he asks of those in the OCC.

A voice from the NT server bank answers, "Yeah, we know about it; we're working on it now."

Kant double-clicks to show where the online runbooks — which include notes such as code changes — for each application will be linked by next year. The red arrow disappears.

The two men beam. "That's the way it's supposed to work," Kant says.

"This isn't easy," Tyminski says of the work that went into developing the OCC and the underlying technology.

"It takes a lot of perseverance because you have to commit to an ongoing process. [The process] doesn't ever end," he says. "Come back in six months, and we'll be managing further out into the environment. We're in a constant state of evolution."

What's CIM?

Common Information Model is a set of schemata for describing management data for applications, devices, services and the relationships among them.

Now a Web-based Enterprise Management standard approved by the Distributed Management Task Force, CIM development began in 1996 as a joint effort of BMC Software Inc., Cisco Systems, Compaq Computer Corp., Intel Corp and Microsoft.

Prudential: In Control

Prudential's OCC manages:

Sites:
- 1,466 sites worldwide

Processing:
- 15 OS/390s with more than 10,000 MIPS of processing power and a 50-terabyte direct-access storage device
- 4,095 Windows NT and Unix servers
- 74,854 networked NT desktops and Windows 95 laptops

Network:
- 1,100 routers
- 500 switches
- 900 hubs
- 3,800 LAN segments
- 1,700 WAN links
- 7,500 token ring or Ethernet adapter interfaces

Creating a One-Stop 'Human Capital' Shop

Personic Inc. looks to become a B-to-B procurement exchange for workers

BY STEVE ULFELDER

THESE DAYS, if you want a desk, you go to OfficeStuff.com (or whatever) and pit desk-makers against one another for the low bid, right? For a customer relationship management suite, you go to CRMmart.com (or whatever) and let a dozen vendors haggle for your business.

Small surprise, then, that pretty soon, when you want a programmer/analyst, you'll go to Personic Inc. or one of its competitors, give your requirements and wait for information technology workers to call.

Brisbane, Calif.-based Personic hopes to do for what it calls the "human capital supply chain" what Commerce One Inc. in Pleasanton, Calif., and Ariba Inc. in Mountain View, Calif., have done for business-to-business procurement: develop a technology infrastructure. "Think of us as a Nasdaq for human capital," says Mohamad Boroumand, the company's chief strategy officer.

Personic will handle not just IT workers but also employees of all stripes, from office temps to high-level executives.

Stiff Competition

As an established recruitment player with 300 employees, Personic is unlikely to dry up and blow away. But with competitors attacking the red-hot market from myriad angles, the big question is whether Personic's business-to-business exchange concept — to be called the Personic Exchange — will take hold. And how comfortable will corporate America be ordering employees the same way it orders a box of pencils?

Founded in 1994, Personic sells recruitment software packages, called EZaccess and Workflow, and has more than 600 customers, including Wal-Mart Stores Inc. in Bentonville, Ark.; L. L. Bean Inc. in Freeport, Maine; and Enron Corp. in Houston. The company hopes to leverage its expertise and installed base to launch the Personic Exchange this quarter.

"[Personic is] well established in recruiting," says John Hagerty, an analyst at Boston-based AMR Research Inc. "They're coming at [the market] from their core competency, which is getting people into companies."

The Personic Exchange will look familiar to anybody who's used other business-to-business procurement exchanges. A buyer — whether an in-house recruiter, a hiring manager or a human resources agent — posts an open position, including specifics such as a job description, pay range and location. A seller of labor then responds.

"We've heard so many horror stories of [hiring companies] paying headhunter fees for people they've already got in their database," says Ankesh Kumar, Personic's co-founder and chairman. "With us, you're getting better mileage out of your recruitment budget."

PERSONIC CO-FOUNDER Ankesh Kumar: "With us, you're getting better mileage out of your recruitment budget"

Personic Inc.

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Phone: (650) 829-6800

Web: *www.personic.com*

Niche: Streamlining recruiting and hiring through a supply-chain model

Why it's worth watching: Any possible answer to the crushing labor shortage may be welcomed by IT managers.

Number of employees: 300

Revenue growth rate: More than 100% per year for two years

Founded: 1994

Burn money: A recent $18 million mezzanine round of financing from American International Group Inc.'s Developed Markets Private Equity Fund, Technology Crossover Ventures, Battery Ventures and BancBoston Capital

Company officers:
- Ankesh Kumar, co-founder and chairman
- Tadhg Canniffe, co-founder and chief technology officer
- John Floisand, president and CEO
- Mohamad Boroumand, chief strategy officer

Red flags for IT: There are competitors with a tighter focus on IT. And will corporate America be comfortable procuring workers like boxes of paper clips?

COMPUTERWORLD emerging companies

With Personic Exchange, the seller can be just about anybody in the labor supply chain. Sure, it may be Joe Schmoe looking for a job. But more likely, the seller will be somebody else.

"A big company probably uses 50 [sources for] staffing," Kumar says.

Managing Resources

This one-stop shopping appeals to Dan Reilley, staffing manager at Novell Inc. Already a Personic software customer, Novell plans to check out the exchange. "Everybody tells you the more exposure the better" when you're hiring, Reilley says. "But when you use over five [Internet recruiting] sites, you've got to go back and manage all [the recruiting information]. It's a lot of work."

Personic will allow all parties to transact business in a single place, supporting both one-to-many and many-to-many models. The company will draw on its recruiting-software background to help [clients] sift through résumés.

While hiring is today's major IT human resources headache, getting rid of people costs money, too. In large, dispersed IT organizations that hire lots of contractors, this can be a problem. "You hire someone for six months," Boroumand says. "Eight months later, they're still there — at $150 an hour."

Hagerty says that when he declares workers must be treated like resources, "I get the head nods — but I also get raised eyebrows." To some, he says, the idea appears "dehumanizing." He says this cultural issue is one of Personic's major roadblocks.

And the company knows it. "There are nuances here," says Tadhg Canniffe, co-founder and chief technology officer. "You're not buying a chair. We 'get' the recruitment process. We've been doing this five years now. We hear the pain from both sides."

Kumar adds, "We want to be a true intermediary. Screening, filtering and assessing [job candidates] is still for staffing pros. Our software will facilitate that process, not replace people."

Ulfelder is a freelance writer in Southboro, Mass. Contact him at ulfelder@earthlink.net.

[the buzz]
STATE OF THE MARKET

Online Staffing: Join the Party

With the labor market beyond tight and the generations-old contract between employer and worker disintegrating, it's no wonder the online recruiting/staffing market is jam-packed.

The following are some of the competitors that Personic will butt heads with. Some are IT specialists, some focus on full-time workers, others on projects.

Icarian Inc.
Sunnyvale, Calif.
www.icarian.com
Its Icarian Workforce exchange may be the nearest thing to a direct Personic competitor

Resumix Inc.
Sunnyvale, Calif.
www.resumix.com
Specializes in streamlining the résumé-sifting process.

VCG Inc.
Norcross, Ga.
www.webpas.com
Its WebPAS is aimed at industry professional staffing.

Webhire Inc.
Lexington, Mass.
www.webhire.com
Bills itself as an application service provider for Internet recruiting

The burgeoning professional services automation field may be appealing because of its tighter IT focus. Some standout players include the following companies:

Niku Corp.
Redwood City, Calif.
www.niku.com

Novient Inc.
Atlanta
www.novient.com

PeopleSoft Inc.
Pleasanton, Calif.
www.peoplesoft.com

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– Steve Ulfelder

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- Access to server configuration files

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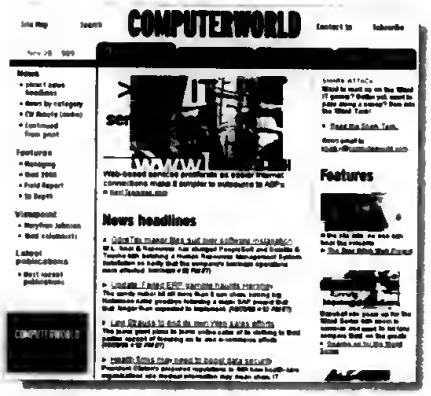

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Who Wants To Be a Millionaire?

Any true IT superstar. So if you want to lure one, you'd better offer a ton of stock options. Or a month's vacation. Or maybe a new sports car. Heck, just make it a million bucks. By Bronwyn Fryer

CLIFF MCBRIDE wasn't exactly looking for a job. He was content enough with his work as a database administrator for the U.S. government. But then a friend of his wife's told him about Interwoven Inc., a hot Silicon Valley e-commerce company that was looking to hire. As it happened, Interwoven was throwing a brand-new BMW Z3 convertible, or its cash equivalent, into the bargain.

McBride's head turned.

BMW Z3s are among the trendiest of the new come-ons in this squeaky-tight information technology market, a market that is forcing recruiters and their clients to go through unheard-of contortions to attract and retain skilled employees.

Other attractions, including million-dollar "loans" that are wholly forgiven and expensive real estate, are increasingly common, says Brent Longnecker, executive vice president at Resources Connection, an executive recruiting firm in Santa Ana, Calif.

The scarcity of IT talent is forcing some employers to recruit highly skilled IT workers the way they recruit top salespeople, with tantalizing offers of sports cars, long vacations and other perks. What can a company in desperate need of skilled technical professionals offer? Here's a brief look at some positions that are extracting fabulous bonuses (some employees are anonymous, to protect their paychecks):

CHIEF TECHNOLOGY OFFICER

- **Company:** A Fortune 1,000 brick-and-mortar operation on the West Coast.
- **Hiring bonus offered:** $1 million, payable in $250,000 increments over four years.
- **Experience needed:** 10 or more years as chief technology officer (CTO) or MIS director.
- **Skills needed:** Candidate must be a proven, successful and "gifted" leader of a large IT organization.
- **Attraction strategy:** Experienced CIOs and CTOs with families to care for are more interested in financial security than in the risk associated with dot-com start-ups. To attract and retain top executives, established companies must create golden handcuffs. This company did this by constructing a "loan forgiveness program" — like those created for elite athletes — that doles out financial rewards over several years.
- **Recruiting strategy:** Go for broke, but don't go broke. The company offers its top-dollar "loans" — along with a hefty equity share in the company — only in very special cases.

"Too many companies give out 2% of their stock to senior executives as a matter of course," says Longnecker. "The person that brings [venture capital] backing with them and a reputation with a big e-commerce name like eBay may be worth 3%, but someone who can do the job may only be worth 1% or 0.05%."

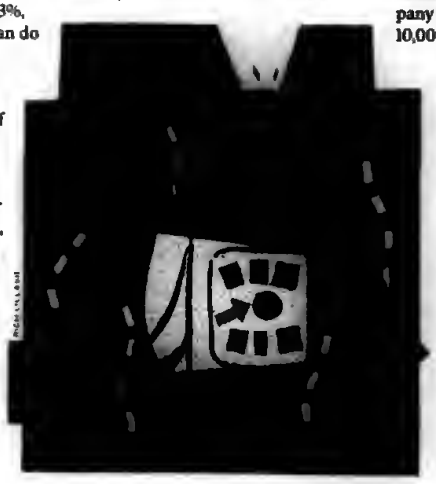
- **Retention strategy:** Bend to the needs of top-level people. "If a CTO needs four weeks off, a 'research sabbatical' or a berth for his yacht, most companies will make it happen," says Longnecker.

CHIEF E-COMMERCE ARCHITECT

- **Company:** Mirronex Technologies Inc., a Princeton, N.J.-based e-commerce hub linking Fortune 1,000 companies with IT outsourcers.
- **Hiring bonus offered:** In addition to a six-figure salary and stock options, a new BMW Z3 or cash equivalent.
- **Experience needed:** Candidates must have designed and built successful enterprise e-commerce systems from the ground up.
- **Skills needed:** Familiarity with Java, XML, systems integration; also soft skills, including team leadership and project management.
- **Attraction strategy:** By January 1999, the company had already spent two and a half months attempting to attract candidates for the position of chief architect, with no takers. (Other positions baited with the BMW Z3 include an SAP/Internet integration specialist, an electronic data interchange/Web integration specialist and a Java developer.)

Mirronex thought up "The First Great BMW Giveaway" and alerted the press. CNN covered the story, and the rest is history. So many people called that the switchboard "blew up," and Mirronex had to shell out $70,000 for a new one, says Stephen Neish, director of business development.

- **Recruiting strategy:** The company had to wade through 10,000 résumés, including one from a lifelong cattle rancher. "But we ended up with the five best people in New Jersey," says Neish. Only one new hire opted for the car; the others grabbed the cash, which was payable in monthly installments.
- **Retention strategy:** "It's no good having a good recruiting strategy if you're an average employer," says Neish.



In addition to working on cutting-edge projects, Mirronex employees are treated to daily games on the company soccer field, twice-monthly "pub nights" and family ski trips.

SENIOR SOFTWARE ENGINEER

- **Company:** Interwoven in Sunnyvale, Calif.; provides content-management infrastructure for large enterprises.
- **Hiring bonus offered:** In addition to a six-figure salary and stock in the publicly traded company, a two-year lease on a BMW Z3 convertible or the cash equivalent.
- **Experience needed:** Seven or more years building enterprise-scale databases.
- **Skills needed:** Deep understanding of relational database management systems (Oracle, Sybase, Informix), Unix platforms and systems administration, plus team building and team management.
- **Attraction strategy:** In March 1999, Interwoven needed to hire 20 engineers in a very short time. Toward that end, the company created a 30-second ad shown in Silicon Valley movie theaters with an attention-getting hook: "Work for Interwoven; win a Z3!"

"We thought a Z3 represented the best in engineering," says spokesperson Kevin Hayden. (The company had never heard of Mirronex or its offer.)

Thousands of résumés poured in — one every 15 minutes, by the company's count — but only 1% of those were worthy of attention. Nevertheless, says Hayden, "we were able to locate and hire great people for all 20 positions."

- **Recruiting strategy:** Applicants had to earn their cars. Senior engineer McBride went through a "grueling" interview process before he was hired, he says. He's currently deciding whether he wants the cash payment or the roadster itself (which he can buy outright at the end of the lease). "I just test-drove one, and I'm talking to the dealership now," he says with a discernible smile.
- **Retention strategy:** Keep engineers happy with a congenial environment, challenging work and daily dinners of spicy Thai food. In three years, not one member of the engineering team has quit.

Fryer is a freelance writer in Santa Cruz, Calif.

Engineering

Software Project Leader
Plainville, CT

Who we are

GE Industrial Systems provides technical engineering and power management solutions, and is a leading supplier of electrical power and equipment products including circuit breakers, switches transformers, switchboards, switchgears meters relays, adjustable-speed drives, control and process automation systems, and AC or DC electric motors

Who we seek.

GE Industrial Systems is seeking a Software Project Leader to be responsible for specification design performance analysis coding integration testing and documentation of Windows based real-time enterprise application software for industrial systems. Specific responsibilities of the position include software ownership throughout the specification, development, launch and growth process, specifying Critical to quality requirements, developing Multi generation product planning and Multi generation service plan, documenting and communication concepts and results, analysis simulation to determine software module and system performance, and expertise in software programming, test, integration and documentation methods and tools.

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What we offer

We offer a competitive salary outstanding benefits package and the professional advantages of an environment that supports your development and recognizes your achievements. For consideration, please forward your resume, including the reference code GEINDSYS/222052/AN030, to General Electric, P.O Box 549231, Suite 26, Waltham, MA 02454-9231 or E-mail opportunities@gecareers.com We are an Equal Opportunity Employer

GE
Industrial Systems

Programmer Analyst Supervise the analysis, design and development of software programs. Responsible for the development and review of programs using C on UNIX, Dos Windows. Demonstrated ability using tools such as Clipper, Foxbase, Visual Basic MS Access. Demonstrated ability working with Client/Server environments. $72,428/yr. 40 hr/wk. 9 a.m - 5 p.m. Must have 5 yrs. exp (or 5 yrs. exp. in related occupation of Systems Analyst) and B.S. in Comp. Sci., eng. rel. field/equiv. Send 2 resumes Case #19983819, P.O Box 8968 Boston, MA 02114

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For consideration, please send your resume to: **RCG Information Technology; Attn: National Recruiting, 379 Thornall Street, Edison, NJ 08837; FAX: (732) 744-3583 or Email to: recruit@rcgit.com** EOE

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RCG INFORMATION TECHNOLOGY

Programmer Analyst (Micro/Web) - Multiple Openings

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BUSINESS SOFTWARE ANALYST

Business Software Analyst to study, review and analyze business processes to determine feasibility of implementation of PeopleSoft Enterprise Resource Planning computer software. Center with personnel of all functional business units to analyze current operating procedures and prepare business processes for all functions of business operations, including financial management, accounts payable, accounts receivable, inventory, order entry, payroll benefits, etc. Conduct fit gap analysis to determine if existing business operations can be mapped into PeopleSoft or if customizations to PeopleSoft are required to conform existing operations. Design changes to existing business systems to conform to PeopleSoft or customize PeopleSoft to conform to existing systems. Also responsible for datamapping, data conversion testing and building and reviewing prototypes. Requirements Bachelor's Degree or equivalent in Business Admin, Accounting or related field and five years experience in Accounting, finance or other management or support position. Knowledge of PeopleSoft Enterprise Resource Planning Software. Salary $70,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Washington Job Center, Manager, Mitcraft Center, Suite 150 LL, 90 West Chestnut Street, Washington, PA 15301, Job No. WEB92695

PeopleSoft Technical Consultant. Job location: Conshohocken, PA. Duties: Convert customer requirements into comprehensive multiplatform distributed solutions using PeopleSoft applications. Design & develop data warehouse solutions using Oracle PeopleSoft & SQL Server. Analyze, design & develop software, customizations, reports, interfaces with production systems & conversions from legacy systems using SQR, Crystal Reports & SQL Reporwriter. Resp. for the design, implementation, testing & documentation of intranet and extranet based application solutions for customers using HTML, XML, Javascript, PL/SQL & Visual Basic. Design & develop web-based comm. facilities. Provide tech. support for systems. Requires M.S. in Comp. or Info. Sci., Eng. or related field & 6 mths. exp. in the job offered or 6 mths. exp. as a Software Eng. or Programmer. M.S. coursework must incl. classes in database systems, oper. systems & software eng. mgmt. Exp. which may have been obtained concurrently, must incl. 6 mths. exp. using PeopleSoft applications. EOE. 40 hrs./wk.: 8:00 a.m. to 5:00 p.m. Salary: $75,000/yr. Send resume (no calls) to: Diane Tuccito, Answer Think Consulting Group, 817 W. Peachtree St., Suite 800, Atlanta, GA 30308. Must have legal auth. to work in U.S.

ENGINEERING PROGRAMMERS needed to prototype scientific, engineering, and other technical designs as required and use prototype to develop engineering software for manufacturing and production systems, to design, program and implement systems using COBOL, PL/1, DB2 and the mainframe's Information Management system (IMS). Masters required in Mechanical or Industrial Engineering or any other related field of study, plus one year of experience. Must have proof of legal authority to work in the U.S. Salary: $80,000/year for a 40 hour work week. Interested applicants submit resumes to: Jane Hosley, Ref. #1311, DES, 275 East Main St., 2-West, Frankfort, KY 40621. Ad paid by an Equal Opportunity Employer.

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Send resumes to J. Parekh or VisualTek Solutions, Inc., 3300 North Ridge Road, Suite 315, Ellicott City, MD 21043.

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DATABASE DESIGN CONSULTANT: Serve as a consultant to management & development personnel regarding database systems & database design & usage. •Develop, maintain & employ a design methodology to design stable, yet flexible databases & modify existing databases. Manage & assume responsibility for ability & usability of existing databases. Develop,maintain & utilize a design methodology to accomplish the translation of logical data design to physical structures for new systems and/or modifications to existing systems. Develop, maintain & execute database management monitoring & tuning methodologies. Perform appropriate system rescue, both in production & test environments, in an accurate & timely manner. Analyze data access needs & usage, configuring direct or middle ware drivers & creating user views to meet the identified requirements. Provide technical expertise & consultation on database management techniques,database access, data usage & problem resolution. Consult on database performance issues, plan & execute testing procedures for new data base related software releases & packages. Present & gain acceptance for database design methodology, new data management concepts & new or modified database designs. Install Informix Online dynamic server V7 x & PeopleSoft7.5x applications, including optimizing the overall performance of the database, reviewing SQL statements to improve efficiency, review tree structures & improve performance. Technical systems include UNIX/AIX 4.x, OS/2, MS DOS, MS WIN 95 and WIN NT 4, SQL language, Informix Online dynamic Server V7.x database, IBM RS/6000 hardware & PeopleSoft 7.5x applications. Applicants must have a Bachelor's degree in Computer Science and 2 years experience as a Database Design Consultant or 2 years experience as a Data Base Administrator, Software Developer or Informix DBA Consultant required. Previous employment experience in the financial services industry must have included installation of the Informix Online Dynamic Server V7x & PeopleSoft 7.5x applications, including optimizing the overall performance of the database, reviewing SQL statements to improve efficiency, reviewing tree structures & improving performance. 40 hours M/F, 8:00 a.m. to 5:00 p.m., $52,403 per year. Applicants should send resumes with Social Security Numbers to the Indiana Department of Workforce Development, 10 N. Senate Avenue, Indianapolis, IN 46204-2277. Attention: OPG, I.D. 48078788. Applicants must possess authority to work permanently in the United States.

Senior Software Engineer: Analyze, design, implement, configure, administer, troubleshoot LAN and WAN comprising of Unix, NT and Alpha/VAX VMS workstations, servers and clusters. Install, configure, administer, manage and integrate workstations and servers using DECNet and TCP/IP protocols on Ethernet, ATM, FDDI networks. Identify problems in Network workstations, servers and provide optimum solutions for complex networks. Debug the kernels using kdb and gdb, analyze crash dumps and use system, network configuration and management tools such as DEC Pathworks. Demonstrated ability configuring, testing NFS/DNS on workstations and RAID disk configuration and monitoring using tools such as SWCC. Demonstrated ability using administrative languages such as tcl/tk, Perl, csh, bourne shell and ability to develop and port C/C++ utilities and applications. Demonstrated ability in system performance tuning using operating systems tools/parameters. $75,000/yr. 40 hr/wk, 9 a.m.-5 p.m. Must have 5 yrs. exp. (or 5 yrs. Exp. in related occupation of Software Engineer) and B.S. in Comp. Sci., Elect. Engg. or field/equiv. Send 2 resumes. Case #19991483, PO Box 8968, Boston, MA 02114.

Programmer/Analyst: Design and develop the specifications for computer systems, computer subsystems, and programs using diagrams and associated design documentation using procedural languages such as COBOL and FORTRAN. Code computer programs using C+ and C++. Prepare test plans and test data for unit-level testing using JCL, Shell Scripts, and RPC. Independently conduct tests and assist in the computer system-level testing. Design, develop, and implement enhancements to the existing Computer systems using Powerbuilder, Visual C++, and PL*SQL. Develop CICS, Oracle, Sybase, Informix, and Red Brick. Participate in training users. Assist in preparing management reports before and after the system implantation using Microsoft EXCEL and WORD. B.S. in Information Systems or equivalent foreign degree. Must have 2 years direct experience or 2 years related experience as a Programmer. $54,210.00 per year. 40 hrs/wk., or n/a, 8:00am-5:00pm, M-F. Please apply by sending your resume to Mr. Bernard Childerston, Nebraska Job Service, P.O. Box 94600, Lincoln, NE 68509. Refer to Job Order NE 0895036. Applicants must have proof of legal authority to work in the United States.

Yield Management analyst-will analyze company needs, input/output requirements, procedures and operating problems to develop & maintain yield management system utilizing SAS/STAT GRAPH, AF, EIS and other SAS packages for inventory and revenue management team. Will monitor and validate system data flow from the on-line reservation system (mainframe) to oracle database (UNIX) and to yield management database. Will conduct statistical analysis on current booking and forecast incremental demands for future voyages to support inventory and revenue managers on decision making using knowledge of finance, marketing research and forecasting techniques, will develop graphical user interface system to provide users on-line information to enable quick responses to business changes. Will liaison with outside technical support and will provide technical assistance to SAS programers and other system administrator using knowledge of ORACLE SQL/PLUS, VISUAL BASIC C++ and a variety of operating systems. Bachelor's degree/computer science or MGMT science & 2 yrs exp. in job offered or 2 yrs exp. Related occupn (SAS programming) 40 hrs/wk. 8am-5pm. $47,424 to $60,000/yr. Send resume to Dept of Labor/Bureau of Workforce Program Support, PO Box 10869, Tallahassee, Fl 32303. JOB#2069118

Programmer Analyst - Legacy Systems (AS/400) - Multiple Openings

Systems analysis, design, development, testing, debugging, quality assurance, integration, implementation, post implementation support & conversion of complex on-line client-server based accounting, inventory, manufacturing, finance & other business application systems using Relational Database Management Systems (RDBMS), Fourth Generation Languages (4GLs) and other software utilities in a multi-hardware/multi-software environment including IBM mainframes, mid-range and PC systems. B.S. in Computer Science/Math/Engineering/Science/Business - Commerce (or equivalent) and 1 yrs experience in job offered or as a Software Engineer/Systems Analyst are required. Must have appropriate combination of skills as follows: 1 of A and 3 of B, or 1 of C and 3 of B, or 2 of B and 2 of C, or 1 of A and 2 of B and 1 of C. A) includes software packages BPCS, MACPAC, MAPICS. B) includes languages RPG/400, CL, COBOL/400, SQL/400, Query/400. C) and C) includes communication/CASE Tools APPC, APPN, SYNON, AS/SET. High mobility preferred. 40 hrs/week, 8 am - 5 pm. $53,096 - $75,000 per year. Qualified applicants should contact or send resume to Ms. Barbara Cole, Supervisor, Greene County Team PA Career Link, 4 West High Street, Waynesburg, PA 15370. Refer to Job Order # WEB 92307

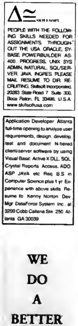
Senior Vice President of Consulting Services (Chief Operating Officer) Duties: Assess current Co. resources to direct, coord and implement consulting svcs; oper for internet eBusiness solutions Co. Relocate for develop and implement new marketplace identity for Co. Formulate, re-build, and execute long-range oper strategies and plans for delivery of svcs and techn. solutions. Eer Co.-wide recruit and train systems. Supervise 20+ execs and profess. and resp. for 70% of Co revenues. Daily comm w/ CEO-Pres and 600+ Freq travel req'd. Min Req's: BA/BS in CS, IT, Bus. Mgmt. or related, plus min of 6 yrs of exper as Senior Exec. in the SW Systems, IT or Telecom Services Industry (or MS/MBA and 4 years exper.) Salary Negot. Benefits. Send Resumes to Riverton Corp. Director Human Resources, One N.E. Executive Park, Burlington, MA 01803.

Software Engineer (multiple openings): Design, develop and implement computer software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have one year of experience using: 1 of Group A and 1 of Group B and 1 of Group C, OR 2 of A and 1 of B, OR 2 of A and 1 of C as follows: Group A - DB2, IBM3090, IBM ES9000, MVS, IMS, IDMS. Group B - CL/400, CICS, TSO, VSAM. Group C - TELON, COBOL, JCL, AS/400, RPG/400, COBOL/400. Bachelor's degree in one of several limited fields: Computer Sci/Appl, Eng, Chem, Math or Physics. Salary is $65,000 per/yr. 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to Mr. James J. Maclan, Manager, Beaver Falls Job Center, 2103 Ninth Avenue, Beaver Falls, PA 15010. Reference Job Order No. WEB 92212

SOFTWARE ENGINEER

Software engineer to design, develop and test computer programs for business applications, analyze software requirements to determine feasibility of design, direct software system testing procedures using expertise in Java, JavaScript, C++ and Oracle Requirements. Master's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of Java, JavaScript, C++ and Oracle. Salary: $65,000/year. Working Conditions: 8:00 A.M. to 5:00 PM., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. Clement Pizzuelli, Uniontown Job Center, 32 Iowa Street, Uniontown, PA 15401. Job No. WEB92689

Software Engineers to design, develop, implement, and maintain complex engineering, business, accounting and management in formation applications and systems. Act as lead analyst in the development, implementation and maintenance of computer systems, including networked and client-server applications, requiring knowledge and experience across a variety of computing platforms, databases and computer languages. Coordinate and instruct programmers and analysts assigned to his projects. Prepare feasibility studies of potential systems, configuration of components, interactive applications, and complex application specifications. Bachelor's in Computer Science or Engineering plus five yr. exp. in job offered or five yr. exp. as Programmer/Analyst or Systems Analyst, or Master's in Computer Science or Elec. Engineering - with the ability to perform the essential job duties req. Salary: $65,562/yr. Job site: various unassigned sites throughout the U.S. Employer location: Pittsburgh. Send this ad and your resume to JobWEB 92319, Washington Job Center, Manager, Mitcraft Center, Suite 150-LL, 90 West Chestnut St., Washington, PA 15301-4517



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Senior Software Engineer. Design and develop CORBA Object Request Broker Product to solve the interoperability problem of COM, CORBA, RPC based applications. Generate the client and server code. Work with CORBA architecture and design. Wholly responsible for project including supervision. Demonstrated ability designing and developing Informix DBA. Demonstrated ability designing and developing client/server applications using C++ and VB. $75,000/yr. 40 hr/wk. 9 a.m. - 5 p.m. Must have 5 yrs. exp. (or 5 yrs. Exp. in related occupation of Software Engineer/Computer Programmer) and B.S. in Comp. Sci. Math. Eng. rel. field/equiv. Send 2 resumes: Case #19991606, PO Box 8968, Boston, MA 02114

SOFTWARE ENGINEER
Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in IDMS, ADS/O and COBOL. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer; knowledge of IDMS, ADS/O and COBOL. Salary: $66,000/year. Working Conditions: 8:00 A.M. to 5:00 PM., 40 hours/week; involves extensive travel and frequent relocation. Apply: Ms. Barbara Cole, Greene County Team PA Career Link, 4 West High Street, Waynesburg, PA 15370. Job No. WEB92697

Software Engineer (multiple openings). Design, develop and implement computer software systems using PeopleSoft and related software. Work requires extensive travel and frequent relocation. Must have 1 year of experience using PeopleSoft and related software. Bachelors degree in Computer Science/Applications, Engineering, Math, Physics, Chemistry or business related field. Salary: $80,000.00 per year. 9am – 5 pm. Send resumes referencing Job Order WEB 92192 to Mr. Terry Kinney, Manager, Armstrong County Job Center, 1270 N. Water Street, P.O. Box 759, Kittanning, PA 16201

Preempt, LLC, a Minneapolis corporation needs the services of a Business Analyst to carry out project planning, costing analysis & develop fin. Mgmt. Info. Sys. using J.D. Edward's OneWorld Dev. & Tech Tools, Parallel Port Applications on IBM AS/400 & J.D. Edwards Vb73.3.2, JDE World, JBA & ILE RPG, RPG/400, CL/400. Min. 2yrs. exp. Salary $50,000/yr with benefits. Fax resume to (612)-829-1240 or e-mail to deb@preempt.com

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IT professionals with a min. of 2 yrs. exp. in A or B or C or D or E or F or G or H or I or J or K needed. (A) Precise SQL, Oracle Replication Manager, Hotstand Database, Sequent Numa Q200, E200, Dynix PTX 4.4.4, HP-UX 10.2 (B) Corba, TMN, Versant, Java. (C) VB Script, Java Script, Active-X, MVS, TSO (D) Nastran, Finite Element Analysis, Paradigm Plus, Enterprise, I-Deas, ADAMS, ROLTA/Integraph (E) JSP, AWT, SWING, Java JDBC (F) Linux, Oracle Enterprise Manager, Delphi Database Designer (G) SAS, Symantec Cafe, Java Script, Syneson, IMS (H) MTS, VB Script, Java Script, COM/DCOM, IIS, (I) SQL Anywhere, Delphi, Perl Script, Code Base, SSAD, OOAD Methodologies, Gentra/PGP, (J) Visual Studio, Visual Cafe, Visual Java++, JDBC, ODBC (K) TSO/ISPF, DTMF, Expeditor, Platinum, Assembler Macros. Travel reqd. Please send resume & salary reqmnts. to HR, OST International Corporation, 1300 Iroquois Drive, Suite 255, Naperville, IL 60563.

Client Server Developer/Analyst. 1. Prepare programming assignments by writing new code, modifying existing code and testing the code to verify the programming logic. Prepare and maintain various documentation to keep manual updates, instruct users and inform project leaders of project status. Perform problem resolution and client support activities. Design, development, testing, implementation, maintenance and enhancement of software packages and applications by utilizing Visual C++, Visual Basic 6.0, Sybase SQL 11.9.2 and Perl 5.0. Requirements: Bachelor's degree in Comp. Sci., Engrg., Math, or Information Systems and either six months of exp. in job offered or six months of exp. in software and/or system analysis and/or design. 40 hrs/wk, M - F, 8:00 am - 5:00 pm. Salary: $45,800 per year. Apply to the AR Employment Security Dept., 1223 W. 7th St., Little Rock, AR, or send two resumes to David Hayes, P.O. Box 2981, Little Rock, AR 72203. Ref. Job Order #0006940

SOFTWARE ENGINEER
Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in IDMS, ADS/O and COBOL. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer; knowledge of IDMS, ADS/O and COBOL. Salary: $66,000/year. Working Conditions: 8:00 A.M. to 5:00 PM., 40 hours/week; involves extensive travel and frequent relocation. Apply: Anthony Gebicki, Westmoreland County Careerlink, 300 E. Hills Street, Youngwood, PA 15697-1806. Job No. WEB92703

Senior Systems Analyst. Dsgn., dvlp., test, & maintain d/base applic. s/ware systms under MVS, NOS/VE, UNIX/AIX, Win NT/Win 95 using DB2 UDB, DB2 for OS/390, MS-Access, UNIFY, COBOL 85, VisualAge COBOL, Lotus Approach, Lotus Script. Dsgng. d/bases on IBM RS/6000 Servers, SP2 Server Clusters & Netfinity Servers. Manage & perform complex systms. engagements incorporating plan & dsgn., installation/migration, problem support, monitoring/optimizatn. for DB2 UDB family of products in UNIX(AIX), Win NT/Win 95/98 & OS/2 envrmts. Extensive travel to client sites reqd. BS (or equiv) in Comp. Sci. Engg. or equiv. 2 yrs. exp. $60K/yr. Send resume to Pyramid Consulting Inc. 5335 Triangle Pkwy., Ste. 510, Norcross, GA 30092

SOFTWARE ENGINEER to design, develop, test, implement and maintain application software for commercial and business computer systems in a client/server environment using object oriented programming. C, C++, COBOL, SQL, PL/SQL, Pro*C, AWK, Oracle, Oracle Financials, Developer 2000, Designer 2000, shell programming, Perl and HTML under Windows 95/NT, Novell NetWare and UNIX operating systems. Require: M.S. degree (or equivalent) in Computer Science, an Engineering discipline or a closely related field, with one year of experience in the job offered. A B.S. degree with five years of progressively responsible experience in the field will be considered equivalent to a M.S. degree. Extensive travel on assignment to various client sites within the U.S. is required. Salary: $70,000/year, 9 am to 5 pm M-F. Send resume to: Raghu Kulkarni, President, ProSoftnet Corporation, 3235 Satellite Blvd., Bldg. 400, Suite 300, Duluth, GA 30096. Attn: Job DP

PeopleSoft Technical Consultant. Duties: Design, develop & implement software solutions for PeopleSoft HRMS & Payroll. Perform application design, set up & testing using PeopleSoft. Perform troubleshooting of system & provide post-production support. Advise clients on global/European HR issues for computer systems & implement new tech. to provide web-based solutions using HTML/JAVA. Requires: B.S. (of foreign equiv.) in Comp. or Info. Sci., Eng. or related field and 2 yrs. exp. in the job offered or 2 yrs. exp. as a Consultant or PeopleSoft Analyst. Exp., which may have been obtained concurrently, must incl. 2 yrs. exp. designing, developing & implementing software solutions for PeopleSoft HRMS & 2 yrs. exp. using PeopleSoft. EOE. 40 hrs./wk., 8:00 a.m. to 5:00 p.m. Salary: $76,000/yr. Send resume (no calls) to: Diane Tuccio, AnswerThink Consulting Group, 817 W. Peachtree St., Suite 600, Atlanta, GA 30308. Must have legal auth. to work in U.S.

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Software Engineer. Design and develop two-tier client/server applications for single business process or service using Oracle as a platform. Analyze and implement business, industry and application specific processes and requirements using Windows GUIs. Design, develop, implement and test application code using VB, Powerbuilder or Oracle Developer 2000. Design and develop report writers using Crystal reports and Oracle Reports and other commercial report writers. Demonstrated ability to work with and provide back-end database access using ODBC, triggers, stored procedures for Oracle database on Windows NT and UNIX platforms such as HPUX, Sun, HP-SCO. Demonstrated ability to develop Oracle applications on a Windows NT platform using Oracle developer 2000, VC++ and MFC. $76,253/yr. 40 hr/wk. 8 a.m. - 5 p.m. Must have 2 yrs. exp. and B.S. in Comp. Sci., eng., math, rel. field/equiv. Send 2 resumes: Case #10983947, P.O. Box 8968, Boston, MA 02114

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Data Base Design Analyst. Duties: Resp. for designing the logical & physical databases in a three-tier client server environ. Configure TCP/IP networks, particularly from a UNIX host perspective & configure the Oracle TNS networking protocols. Perform system admin. tasks using UNIX (Solaris, AIX, Linux) & develop UNIX shell scripts for automation of UNIX database server tasks. Resp. for the installation & mgmt. of the NT server & Oracle server under UNIX & NT. Create, maintain & tune Oracle and MS Access database & perform PL/SQL coding in support of applications for Oracle and MS Access databases. Resp. for system & database change mgmt. & source code mgmt. and control. Requires M.S. in Comp. or Info. Sci., Eng., or a related field & 6 mths. exp. in the job offered or 6 mths. exp. as Systems Analyst or Analyst Consultant; must incl. classes in Database Systems & Systems Analysis. Exp., which may have been obtained concurrently, must incl. 6 mths. exp. using MS Access database. EOE. 40 hrs./wk., 8:00 a.m. to 5:00 p.m. Salary: $63,100/yr. Send resume (no calls) to: Teresa Davidson, Volvo Commercial Finance LLC The Americas, 7825 Nat'l. Service Rd., Bldg. 2, Greensboro, NC 27409

Newbridge Networks is an international company specializing in state-of-the-art digital networking communications systems. We've been designing, developing and delivering these systems for 18 years to customers throughout the U.S. and the world.

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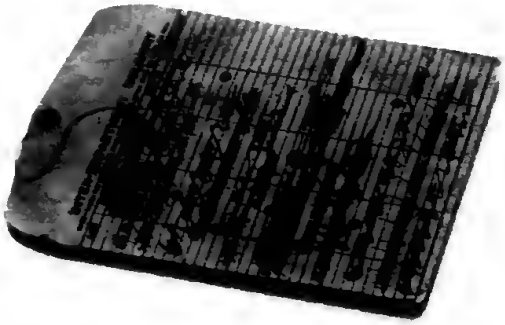
We have openings throughout the U.S. including Chantilly, VA; Andover, MA; Chicago; Dallas and Houston; Miami; Philadelphia; San Ramon, Santa Clara and Sunnyvale, CA; Denver and Bloomington, MN.

We offer competitive salaries and comprehensive benefits. Please send your resume to: Newbridge Networks Inc., HR-Resumes, Dept. CW 15036, Conference Center Drive, Chantilly, VA 20151. E-mail: fmsa@newbridge.com. Fax: 703-679-5114. EOE



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Unfortunately, some of you think we're stodgy. Old school. Low tech. You pretty much see us as just the 'postage people'. Right? How ironic. Two of our hottest technologies right now are taking mail and stamps to the next level. At Pitney Bowes, we're about internet innovations. Hot technologies. Cost-effective business solutions and more. That's why when people think of messaging they think of Pitney Bowes. That's why you should think again. E-mail resumes to staffing@pb.com. Or visit us at www.pitneybowes.com. EOE

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Senior System Analyst The employee will be responsible for maintaining the existing PVCS source code management system within the employer, as well as for implementing and designing enhancements to the existing PVCS source code management system within the employer. The employee will also be responsible for trouble shooting of problems with the PVCS source code management system by developers and will be responsible for the upgrading of the base version of the PVCS source code management system and the integration of existing custom enhancements. The employee will have responsibility for the documentation of the internal operations of the PVCS source code management system and integration of the Package Manager product with the PVCS source code management system as well as analysis of and enhancements to the Package Manager product as it proceeds through its life cycle. In addition the employee shall have responsibility for the development of corporate standards for applications both GUI and non-GUI, within the employer through the analysis of existing employer applications and others and review of current literature in this field. The employee will be responsible for the development of "best of" practices for developers with the employer upon review of current practices across MVS and IX Unix production environments. The employee will provide technical support for the employer developers in the areas of Oracle Forms and Oracle Reports development together with the review and recommendation of new packaged tools and software for application development within the employer. The employee shall be responsible for analysis, design and development of new custom development for software tools for the developers within the employer.
Required: B.S in Computer Science. Two years experience in job offered. **$66,000 a year; 40 hours per week, 8:00 a.m. - 5:00 p.m. Two copies of resume to: File C101229, DWE-ALC; P.O.Box 7972; Madison, Wisconsin 53707-7972. Reference file #C101229.**

Programmer Analyst - Sought by Clinton, IA consulting company to work in various unanticipated locations throughout the U.S. Analyze, plan, develop, test and document computer programs. Evaluate user requests and business requirements for new and modified programs. Liase with business and data processing management to formulate and define system scope and objectives through research and fact-finding to develop and modify information systems. Installation of computer systems and networks. Use of DB2, CICS, EASYTRIEVE, VSAM, COBOL and EXPEDITOR Reqs. Bachelor's in Computer Science, Computer Engineering, Electric or Electronic Eng., Math, Statistics or its foreign equivalent. Plus 1 year in the job offered or 1 year in a related occupation such as Programmer. $48,000/year, 40/hrs/wk, 9AM-5PM. Respond by resume to Iowa Workforce Center, 2740 S. 17th Street, Clinton, IA 52732-7040. Refer to Job Order No. IA 1101033.

Programmer Analyst - Sought by Clinton, IA consulting company to work in various unanticipated locations throughout the U.S. Under direct supervision, design, develop, code, test and implement software applications. Analyze client requirements and design and develop software applications to meet client specifications and goals. System testing and installation. Use of IBM 370, 4331, IBM AS/400, NCR, COBOL, and DB2 Reqs. Bachelor's in Computer Science, Electrical or Electronic Eng., Math, Economics, Statistics or its foreign equivalent in education or experience. Plus 2 years in the job offered or 2 year in a related occupation such as Programmer, Systems Analyst, and/or Manager. Will accept 2 years of college education and six years of experience in lieu of required education and/or experience. $48,000/year, 40/hrs/wk, 9 AM-5PM. Respond by resume to Iowa Workforce Center, 2740 S. 17th Street, Clinton, IA 52732-7040. Refer to Job Order No. IA 1101034

Sr. Software Design Engineer (Highland, IL) To analyze, design, develop & test software for Intelligent Electronic Devices and Client/Server software for Electrical Power Applications in Substation Automation Projects. Using Assembly, C, C++ for embedded applications, Visual Basic and Pascal for Windows NT applications utilizing the native assemblers, compilers, software emulators, debuggers and simulators to design, develop, test & debug, develop algorithms and write software for power monitoring, protection, control and fault analysis of power system events and disturbances, develop software for various communication network protocols, participate in all phases of the software development cycle such as product conception, software requirements analysis, design coding, testing, commissioning, maintenance and project documentation. Requires a MS in Comp. Sci., Elect. Engr., or the equiv. and 1yr. exp. (or a BS in the same fields and 5 yr exp.) $60,900.00/yr., 40hr/wk, M-F, 8:00-5:00. Resume to Mr. Snow, Basler Electric Company, Box 269, Route 143, Highland, IL 62249. An employer paid ad. E.O.E. M/F/D/V

Systems Analyst assigned as Consultant to analyze, design, develop and enhance computer systems, and perform systems programming and technical documentation in engineering business setting, using Visual Basic, SQL, Object Oriented Programming and COM/DCOM, as directed by the Company's clients. Multiple openings available. Requires M.S. or equivalent-level degree in Engineering, or a closely related field. Qualified applicants must presently be eligible for permanent employment in the United States. Successful applicant must be able to perform job duties on date of application. Salary $125,000 per year plus company employee benefit plan; 40 hours per week (8:30 a.m. to 5:00 p.m.). Send resumes to Mr. Lanny Schwent, Partner, Ferguson Consulting, Inc., 12444 Powerscourt Drive, Suite 236, St. Louis, Missouri 63131. An Equal Opportunity Employer.

User Support Analyst (Houston, TX): Installs radio frequency wireless network software and hardware; develops user manuals and procedures; provides training on-site or in classroom and customers problem-solving support using knowledge of complex network design; writes software and hardware evaluation and recommendation for management review. Bachelor's degree in Computer Science or Electrical Engineering plus 2 years in carrying out above duties or 2 years experience working in a Computer Network Sales Engineer or Sales Manager with knowledge of Microsoft NT and UNIX. Contact: Ms. Reshida Malban, Shipco Logistics, Inc., 10101 Harwin Drive, Suite 302, Houston, TX 77036 (ph) 713-981-4786 (fax)713-981-4788

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Senior Programmer Analyst

This position is responsible for providing software application development and maintenance, and hardware system configuration and on-going maintenance support for the MARS (Manufacturing and Release Simplification) and MARS Archival Systems. These systems make up the application platform for the electronic batch record process. The system is configured using POMS.

Duties include:

- Gather user requirements and develop system specifications
- Develop system and install hardware solution
- Develop system testing and validation plans
- Prepare user documentation and training material. Provide user support
- Conduct post implementation reviews and perform system maintenance
- Provide on-going problem management support

The position calls for an individual with the following skills and knowledge:

- **Programming Language skills** A thorough knowledge of programming (Pascal, C++, Visual Basic)
- **Operating Systems** The individual must have experience in Windows NT, UNIX and OS/2
- **MS Certification** is preferred
- Knowledge of network operating environments and configurations is needed
- Experience with relational database management systems, i.e., ORACLE is a plus
- A thorough knowledge of hardware characteristics, set up, installation configuration and troubleshooting is essential (Servers, PC, Printers, Scanners, etc.)
- The position calls for an individual with superior problem management skills
- All work must be performed with knowledge of and in compliance with current Good Manufacturing Practices for an FDA regulated environment. Duties performed under computer system development guidelines and strict change control procedures

MINIMUM REQUIREMENTS: Bachelor of Science Degree in Computer Science, Computer Engineering, Information Systems, Electrical Engineering, and 1 year prior experience in position(s) with following job duties:

1. **MAINFRAME:** Large-scale application development experience using Cobol, Pascal, Basic, Fortran, assembler sub-routines and Job Control Language. Hardware repair and maintenance services for mainframe systems including printers, disk drivers, tape drivers, processors and on-line terminals
2. **SERVER:** Setup, configuration and implementation of Windows NT Domain Controllers, applications servers, Print servers, DNS servers, WINS servers, Proxy servers and level 5 Raid servers
3. **DATABASE:** Installations and maintenance of ORACLE and DB2 in Data Bases
4. **WORKSTATIONS:** Design, construction and maintenance of personal computers from component levels. Experience with installation and maintenance of DOS, Windows 3.1, 95, NT and OS2 operating systems
5. **NETWORK:** Design, implementation and configuration of computer networks using Windows NT, Novell, Windows for Work Groups and DecNet network operating systems. Hardware Systems Infrastructure design implementation and configuration of network vendor Cisco, Synoptics and 3COM components such as active and passive hubs, smart hubs, Bridges, Routers and Brouters. Design and implementation of wide area networks, point to point connections, dialup connections, remote access services and Virtual Private networks

STARTING SALARY: $48,800 per year for a forty-hour week

THE JOB ORDER NUMBER FOR THIS JOB OPPORTUNITY IS 219454. NO CALLS, PLEASE. PLEASE SUBMIT A RESUME REFERRING TO JOB ORDER NUMBER 219454 TO:

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Programmer/analyst wanted by Comp Contract Prgmg & Consulting Firm in Sugar Land, TX. Must have BS in Comp Sci or Comp System Dsgn & 6 mos prgmg exp. Send resume to Robert J. Meyer, Branch Manager, Digital Consulting & Software Services, One Sugar Creek Center Blvd, Ste 500, Sugar Land, TX 77478

More and more people are relocating to Las Vegas. 6,000 a month at last count. Why? To raise their families. Las Vegas made the Top Ten list of Money Magazine's "Best Places To Live" thanks to great schools, affordable housing and no personal income tax. In addition Las Vegas offers a wealth of other advantages fine American cities can match. One of those advantages is the health care provided by ***Sierra Health Services****, comprising Nevada's largest health maintenance organization and largest multi-specialty medical practice.*

Sierra Health Services is growing to keep pace with the new Las Vegas. We're looking to fill key technical positions. If you possess a fresh, positive attitude and solid work ethic, we invite you to discover Sierra Health Services, and the rewarding career and lifestyle you deserve. In addition to a dynamic work environment, our Las Vegas headquarters afford an attractive lifestyle rich in outdoor recreation, culture, sporting events and entertainment. With low utility costs, a very affordable housing market and lots of sunny weather (over 300 days a year), Las Vegas ranks at the top as a great metropolitan area to call home. We currently have the following positions available:

MANAGER, SYSTEM & NETWORK ARCHITECTURE

Responsible for corporate server and network infrastructure and architecture, reporting to the Chief Technology Officer. Manage a senior level technical team that evaluates, designs, installs and administers all data center equipment, LAN's, MAN's and WAN's. Requires 7+ years system and network administration experience and 5+ years experience managing technical teams and vendor relationships. Preference given to candidates with a background in HP-UX, Windows NT and Cisco.

NETWORK ENGINEER IV

Responsible for the evaluation, design, installation, trouble shooting and administration of a complex, coast to coast, corporate network that includes multiple LAN's and MAN's. Requires significant experience with TCP/IP, Switched Ethernet, Gigabit, ATM, FDDI and Frame Relay. Oversee, train and coordinate the activities of other Network Engineers.

NETWORK ENGINEER III

Responsible for the installation, trouble shooting and administration of a complex, coast to coast, corporate network. Requires 5+ years experience with TCP/IP and Ethernet based networks, including the configuration of hubs, routers and switches. Experience with Gigabit, ATM, FDDI or Frame Relay a plus.

PROGRAMMER ANALYST HEALTHCARE EDI

Under minimal supervision, work with business users in analyzing business needs, design and code software solutions and map data from various sources using EDI mapping software. Experience working with vendors, clearinghouses and all levels of customers is desirable. Familiarity with medical claims processing, HIPAA, and EDI translation software highly desirable. Three to five years in software development with proficiency in SQL, Visual Basic, COBOL and/or Basic with a firm understanding of structured systems analysis, programming techniques and systems development life cycle.

PROGRAMMER ANALYST INTERNET eBUSINESS

Responsible for creating and maintaining the company's internet and intranet business applications for the eBusiness department. Requires 3+ years experience developing web applications using Microsoft Visual tools, HTML and ASP, preferably on NT servers accessing SQL Server and/or Sybase. Knowledge of healthcare systems, finance or insurance highly desirable.

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UNIX SYSTEM ADMINISTRATOR

In this position you will be in charge of UNIX hardware selection, installation, local maintenance, UNIX System administration, credentials, and supervisory operations. Additionally, you will administer system maintenance contracts, cooperate and assist UNIX-user community in identifying, diagnosing, and correcting issues relating to use of the UNIX based network, computer systems, applications infrastructure or project execution resources, and act as the primary interface to external, corporate or non-corporate, resources relating to UNIX support.

The qualified candidate will have a BS with 6-8 years related experience (MS preferred) and UNIX (Solaris) system management expertise. Veritas and SUN hardware experience is essential, a background in a design environment utilizing ECAD tools (Cadence, Synopsys, PRO-E) highly preferred.

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Director of Scientific Computing Division sought by non-profit research center in Boulder, CO to work in Boulder & other unanticipated job sites in the US; Manage scientific computing division of atmospheric research center in the provision of high performance computing, net working, scientific visualization, mass storage & related services. Specifically, develop strategic & operating plans for the scientific computing division of atmospheric research center; plan & implement budget for division; develop policies for use, safety & security of facilities; access & execute all staffing decisions, oversee & plan staff development & training; represent division on committees & to sponsoring government agencies; work with high performance computer operating systems including UNIX, IBM, AIX, Sun Solaris & SGI Irix. Requires Master's or foreign equivalent in meteorology, atmospheric science, engineering, or related field; 3 years' experience performing the duties & using the technologies described above. 8am-5pm, M-F. $140,000/year. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order #CO4656048.

Software Engineer
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IT Careers in e-commerce/e-business

A recent check of major American businesses points out the fact that e-commerce remains in its infancy - just 5 percent of the country's major manufacturing operations have a fully defined e-commerce strategy.

In this infancy, the e-commerce space continues to open doors for entirely new products and services for company's large and small.

by Carole Hedden

Exactis.com
Denver, CO

Just as targeted direct mail capabilities developed as part of direct marketing, so too has targeted e-mail distribution as part of e-commerce. Exactis.com is the industry leader in providing a full range of e-mail marketing and communication solutions. "We distribute a wide variety of marketing and communication e-mails for our customers. In addition, we do the back-end tracking of who opens the mail and clicks through to the Web site; provide a complete customer service department and provide our clients with industry insight to make sure they are following anti-spamming guidelines," says Andrea Russell, human resources generalist for the company.

Exactis.com launched its business as Mercury Mail, providing business, sports and entertainment news updates to its base of more than two million subscribers. Today the company has more than 100 clients, from MSNBC Interactive to Charles Schwab & Co. and E-Greetings.com. "Our employees are developing cutting-edge technology because we must retain our position at the front of this industry," says Russell. "So you'll be working on projects that define new e-mail products and what e-mail will actually be in the future."

Exactis.com is looking for people with strong technical skills, particularly in UNIX, Perl and Java. "We also expect applicants to have been in the industry for a while, have good people and leadership skills and demonstrate that they know how to use their ideas for business."

In addition to offering the opportunity to develop next-generation e-mail capabilities, Exactis.com provides internal and external training and a full-scope benefits package.

"We offer you an opportunity that no one else can at this time because we are doing business that others aren't doing," Russell adds. "We have a very fun environment, where you'll be working on projects that last one week to three months, from development to full-scale implementation. That's fast turnaround and will keep you moving forward."

icarian
Sunnyvale, CA

Today's companies face a daunting challenge in building and managing their workforce. The processes, markets, services, vendors and technologies that currently comprise workforce management are perhaps the most fragmented and inefficient on earth. Based in Sunnyvale, CA, icarian has taken the lead in solving this through an innovative and ambitious approach to automating the workforce processes and integrating companies' B2B supply chains.

"We're in the business of optimizing the workforce for companies, using the Internet," says Gary O'Neall, vice president of engineering. By optimizing, O'Neall is talking about every aspect of planning, hiring, and retaining people - from forecasting workforce needs, to identifying talent, to conducting background checks, to relocating people, to matching people's assignments to their evolving skills.

"We provide an e-commerce workforce solution for identifying talent that crosses all industries and assists very large and very small companies. We distinguish ourselves by focusing on all the roles in the workforce management process: line managers, human resource professionals, and executives all collaborate in our solution," says O'Neall. Through icarian's dynamically hosted services, customers' employees have access to this complete solution through nothing more than a standard web browser.

This service translates to a highly integrated and complex technology system that involves B2B supplier integration, data integration, and workflow processes. Because icarian's tools bring together input from a variety of suppliers - doing the background checks, moving new employees across the country - icarian is working to standardize some technologies. "We are in a leadership position within the human resources field on a consortium XML project. So we're looking for people who know Java and XML technologies, who have experience in building applications in the Internet environment," says O'Neall. "We're always looking for more senior engineers who have managed more than a couple of releases of software."

While icarian has fewer than 200 employees, it already is gaining big attention. It was listed by *Interactive Week* as the "#1 Company to Work For." Employees are provided with "icarian bucks", dollars that are allocated for ideas and spending to make icarian a better place to work and a better company. "There's a lot of empowerment involved in work but also in making icarian a better company overall," says O'Neall.

"We work hard at being a fun place," says O'Neall, who is one of several icarian employees who are members of the icarian rock-n-roll band. "There's a ping pong ladder and a hiking schedule. Generally, you find that we enjoy working together and have a lot of passion for producing excellent results."

Pitney Bowes, Inc.
Stamford, CT

Over the decades, Pitney Bowes has carved out a reputation as a technology company that enables postal service and messaging systems. Now, the company is transforming itself yet again as the marketplace shifts. "Our customars are changing and technology will enable us to work with them in ways that several years ago we would not have dreamed possible," says Fred Purdue, vice president and general manager for business re-engineering.

"My job is to look at where the business is going and determine what we need to enable the business," says Purdue, himself a business leader versus a traditional information technology leader. "Wa are inventing and discarding processes and technology, an equal challenge in reinventing the company."

Pitney Bowes' e-business projects lead the affort in the reinvention process. Purdue says they include back office projects and customer relationship management applications. "The intrigue for IT professionals is the ability to partner in ways we never have with the business. We need peopla who are accustomed to working in a faster e-business environment, who know what it's like to work in a less-than-certain environment. They'll be managing technology, but also managing ambiguity. You'll be making decisions constantly but also need to be fast, flexible and decisive that you can correct course while you keep moving ahead."

> "Our customers are changing and technology will enable us to work with them in ways that several years ago we would not have dreamed possible."
>
> Fred [illegible]
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Purdue is looking for people with software and integration skills and evidence of partnering with business functions. "You will be part of redefining the culture at Pitney Bowes so we aren't identifying a 'cultural fit'," says Purdue. "By and large, however, people are open here and tend to operate from an outside-in perspective. We're a financially sound company that has shown the ability to maintain profitability and business focus over our history.

"I'm 53 years old and am on the steepest learning curve of my life," ha adds. "This is where you will continue to move forward, continue to reskill yourself. "You have, behind you, the where-with-all to reinvent something. Most of the e-business work we're doing is green field and you will be creating the environment to work to tha limits of your capability."

Sequoia Software Corporation
Columbia, MD

While most companies talk about the fast pace and intellectual intrigue of developing entirely new technologies, Sequoia Software acknowledges that there's also room for a few innovative tools to help customers do more with the Internet.

Jennifer Spiegel, vice president of human resources, says tha company most recently introduced an XML-powered e-business tool known as Xdex. "XML is showing up everywhere," Spiegel says. "Xdex is a tool that allows anyone creating, gathering or exchanging XML files to intelligently index and search this information."

For the past two years, Sequoia's focus on XML-powered solutions has helped drive its break-neck growth. "The new tool fills a gap," says Spiegel. "It works behind the scenes and is sold only through our web site."

Sequoia's flagship product, XPS – the XML Portal Server – actually incorporates Xdex as its indexing and search engine. "XPS, which is soon to enter its third release, is used for creating interactive e-business portals," explains Spiegel. "Interactive portals help users become more productive by reducing the tima and effort required to find and act on the specific information they need. Xdex plays a significant role in the portal by organizing XML information in a contextually relevant manner."

Sequoia mora than doubled in size in 1999 through solid growth and the acquisition of Radian Systems of Alexandria, VA. The company targets five vertical markets – financial services, insurance, healthcare, telecommunications/technology and manufacturing. Sequoia is in the pre-IPO "quiet period" and can't comment on specific growth rates. Yet, according to Spiegel, "We need software engineers to help build and implement product, technical angineers to assist with sales, and web developers. Our target skill sets includa C++, COM, ATL, VisualBasic and ASP experience."

"With all the growth last year and what we expect this year, we're focusing more attention to keeping people here," Spiegel notes. "We'ra offering stock options and quarterly bonuses, so you always know how your skills ara matching up with tha business objectives. The idea is that you can stretch to meet your potential. We also have a first-class training facility and staff that provide employees and clients with technical expertise on our products."

Sequoia's work environment also helps sustain employee morale and effectiveness. In addition to barrels of chocolate-covered candies and health food scattered throughout the offices, the company recently had massage therapists on site during product release preparation. "The massage therapists were a big hit and will be returning soon," notes Spiegel.

"We try to keep things informal and comfortable," says Spiegel. "Wa're looking for phenomenal people who fit with the positive chaos that is part of Sequoia."

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Joseph L. Levy

Vice President/CIO
Rick Broughton
(508) 620-7700

Senior Vice President/Publisher
Peter C. Horan
(650) 524-7017

Vice President/Marketing
Derek Hultzky
(508) 620-7705

Vice President/Editor in Chief
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Vice President/ Manufacturing Operations
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BY MARIA TROMBLY

IN AN EXAMPLE of how the Internet makes it possible for financial institutions to quickly add services that didn't exist a few months ago, several banks, insurance companies and credit unions have struck a deal with Bellevue, Wash.-based Netstock Investment Corp. to offer customers the chance to buy stock.

Netstock's ShareBuilder.com service allows anyone — usually beginning investors — to invest a regular amount of money in their favorite stocks at a cost of only $1 or $2 per transaction with no minimums.

That makes the company appealing to Main Street customers and first-time investors — and also helped attract ShareBuilder.com's new partners.

"Many other online investment systems appeal to day traders," said Randy Talbot, president of Safeco Life & Investments, a subsidiary of Seattle-based Safeco Corp. [Nasdaq:SAFC]. "Our customers are long-term savers and long-term retirement builders."

Talbot said the service will be available by the end of next month and marketed not only through the Safeco Web site but also through agencies' and financial professionals' Web sites.

Because of its low cost, ShareBuilder appeals to people who want small amounts of stock, Talbot said. "It allows people who have previously not been able to afford the transaction costs of small share buys to start building positions in stocks that they want to own."

The main advantage besides the low price — which is possible because ShareBuilder saves up all the trades and executes them once a week, rather than in real time — is that by buying a fixed dollar value of a stock every week or month, the investor ends up buying more of the stock when it's cheap and less of the stock when it's expensive, says Netstock Investment CEO Jeff Seely.

Last week, the company signed a deal with a number of financial services companies — including San Francisco-based Wells Fargo & Co. [NYSE:WFC], Safeco and six of the largest credit unions in the country.

According to ShareBuilder.com spokesman Brian Ratziff, the company will now be able to reach 25 million customers, 15 million of them through Wells Fargo alone.

"It helps us satisfy an important need in the market," said Martin Gates, manager of Wells Fargo strategic investments.

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KEY: (H) = New annual high reached in period
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How to Contact Computerworld

TELEPHONE/FAX

Main phone number (508) 879-0700
All editors unless otherwise noted below
Main fax number (508) 875-8931
24-hour news tip line (508) 820-8555

E-MAIL

Our Web address is **www.computerworld.com.** All staff members can be reached via e-mail on the Internet using the form: **firstname_lastname@computerworld.com.**

All IDG News Service correspondents can be reached using the form: **firstname_lastname@idg.com.**

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to: **letters@computerworld.com.** *Include your address and telephone number.*

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Phone Ray Trynovich (717) 399-1900, ext. 124
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CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Editor in Chief Maryfran Johnson (508) 820-8179
Editorial Director, Print/Online Patricia Keefe (508) 820-8183

DEPARTMENT EDITORS

News Editors Anne McCrory (508) 820-8205
Sharon Machlis (508) 820-8231
Thomas Hoffman (914) 988-9630
Assistant News Editor Don Tennant (508) 620-7714
Business Editor Kevin Fogarty (508) 820-8246
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Technology Editor Robert L. Scheier (508) 820-8226
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REPORTERS

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Internetworking, telecom/wireless, defense and aerospace James Cope (219) 273-5369
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OPINIONS

Staff Columnist Frank Hayes (503) 252-0100
Columns Editor Rick Saia (508) 820-8118

FEATURE EDITORS

Special Projects Editor Ellen Fanning (508) 820-8204
Business Feature Editor Thomas Hoffman (914) 988-9630
Reviews Russell Kay (508) 820-8175
IT Management Rick Saia (508) 820-8118
IT Careers David R. Weldon (508) 820-8166

FEATURE WRITERS

Gary H. Anthes (202) 347-0134; Matt Hamblen (508) 820-8567; Kathleen Melymuka (508) 628-4931; Kim S. Nash (773) 275-4133; Mathew Schwartz (508) 820-8285

RESEARCH

Lorraine Cosgrove Ware, **research director;** Mari Keefe, **editorial research specialist;** Lisa Sydney, **online researcher;** Allison Wright, **editorial research intern;** Rayna Melendy, **graphics coordinator**

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COMPUTERWORLD ONLINE

Tom Monahan, **director, online and design** (508) 820-8218; Sharon Machlis, **online news editor** (508) 820-8231; Craig Stedman, **online news editor** (508) 820-8120; Brian Sullivan, **communities page editor** (508) 620-7780; Peter Smith, **Web development manager;** David Ramel, **online production coordinator and e-mail newsletter editor**

CONTRIBUTING COLUMNISTS

Allen E. Alter, Joe Auer, Jim Champy, Michael Cusumano, John Gantz, Dan Gillmor, Peter G. W. Keen, Bill Laberis, David Moschella, Fran Quittel, Paul A. Strassmann, Don Tapscott, Ed Yourdon

CONTRIBUTING WRITERS

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Microsoft

is not supported by anything in the lawsuit," said Bill Gates, Microsoft's chairman and chief software architect. "Microsoft never could have created Windows and Office if they were in separate companies. This was not developed by anyone who knows anything about the software business."

Microsoft President and CEO Steve Ballmer said the company "will continue to work with the government in good faith to resolve this dispute" but is confident it will win on appeal.

The government's remedy proposal — splitting the applications, servers and middleware operations from the operating system business — has already touched off a raucous debate among end users, legal experts, economists and many others (go to our forum at www.computerworld.com). Court-ordered breakups are rare and usually are done along past merger or geographic lines.

End users, in a *Computerworld* poll of 132 respondents taken last month, said a breakup was their least-favored option. Less than 20% supported it. About half supported some form of conduct remedy.

That viewpoint was upheld by users interviewed this week.

"I think that what Microsoft did was predatory, and I think it was wrong, and I think they should be punished. But I think the scale on which this is being carried out is overkill," said William Steinmetz, an information technology director at Lear Corp., an automotive interior manufacturer in Southfield, Mich. "It's too much. It's way beyond what was needed."

Some wonder whether a breakup will make any difference at all.

"Depending on the business practices they choose, [Microsoft] could be just as damaging as two different companies as they could be as one," said Ron Wells, an information systems director at Carolina Turkeys Inc. in Mount Olive, N.C.

A split-off application company "could choose to stay [and develop] on the Microsoft platform. I don't see how the government could really force that issue," Wells said.

But others say a breakup may improve competition.

"It could probably be a good thing for the country, but it's going to be very confusing for a period of time," said Harvey Kasinoff, who does advanced development work at PMI Food Equipment Group in Troy, Ohio.

Judge Thomas Penfield Jackson isn't obligated to impose the remedy outlined by the government. And if the government believes the judge is reluctant to break up Microsoft, it's good legal strategy nonetheless to recommend it, experts said.

"It's a sound strategy to demand more than you may realistically expect," said Hillard Sterling, an attorney at Gordon & Glickson PC in Chicago. "A breakup request at least will focus Judge Jackson on the need for significant relief."

And even if Jackson imposes a breakup, Microsoft's appeals could reduce the basis for such an extreme remedy.

"If, during the appeals, Microsoft succeeds in overturning important elements of Judge Jackson's conclusions of law, they will simultaneously weaken the foundation for a broad-based remedy," said William Kovacic, a law professor at George Washington University in Washington.

In any event, no irreversible remedy — such as a breakup — would be imposed until all appeals are exhausted, said legal experts. That could take several years — or less than one, if the case goes directly to the Supreme Court.

End users could feel some impact from this case in the relatively near future if some of the government's interim remedies proposed last week survive appeal (see chart). These interim remedies include a requirement that Microsoft share its interfaces and technical information with developers as they start using them internally. The government may also expedite this case to the Supreme Court, bringing a final legal ruling in a year or so.

It still remains to be seen whether the government's breakup goes as requested. But even if the company is broken up, it may be years before the impact is really felt.

The government's proposed breakup separates the server and Office products from the operating system. But it might take 18 to 24 months before Microsoft's server products could be rewritten to work with other operating systems, said Dan Kusnetzky, an analyst at International Data Corp. in Framingham, Mass.

Little Change?

A breakup of Microsoft alone wouldn't change much within the software industry, argued Jean-Louis Gassee, president and CEO of Be Inc., an operating system maker in Menlo Park, Calif. The new companies could become new monopolies, he warned. But Gassee said a split-off applications company would be expected to make versions of Office for Linux and, as a result, might pressure the operating systems company to end its restrictive licensing practices. He added that a breakup, along with conduct remedies, will be needed to change Microsoft.

Glenn Gies, manager of security and infrastructure services at Koch Industries Inc. in Wichita, Kan., doesn't see users moving off Office if the applications business is separated from the operating systems business. But some good may come of a breakup along those lines, he said, in that the Office company might be more willing to develop office productivity applications that are independent of the operating system and work on the application service provider model.

Domenick Branciforte, corporate technology manager at insurer Royal & SunAlliance USA in Charlotte, N.C., said the main thing is that Windows and developer tools stay together.

"If the developer tools move with the Windows operating system, we're fine with it," said Branciforte. "Office is more of a commodity" and could easily be replaced by Lotus Development Corp.'s SmartSuite, with which many of Royal & SunAlliance's users are familiar.

Luke M. Froeb, an economist at the U.S. Department of Justice during the Reagan and Bush administrations, said a breakup doesn't free the government from the need to impose conduct remedies.

"If you break up the company into pieces, you're going to have two dominant players: a dominant applications suite and a dominant operating system," said Froeb. "What's to prevent that operating system [company] from doing exactly what it did the first time?"

Froeb, now an associate professor at the Owen Graduate School of Management at Vanderbilt University in Nashville, said the court would be involved in making sure the split-up firms didn't expand into other areas. "I don't see how you can avoid a conduct remedy," he said.

Robert L. Scheier and Dominique Deckmyn contributed to this story.

Breakup Formula

The government filed its plan to divide Microsoft into two companies on Friday at the U.S. District Court in Washington. Microsoft will respond on May 10, and the judge will hold a hearing on May 24. A breakup wouldn't be imposed until all appeals are exhausted.

1) Operating system company: Would include the Windows 2000, 98 and CE operating systems and other system products.

2) Applications company: Client, server and middleware, such as Office, Internet Explorer, developer tools, SQL, Internet content business and Microsoft's consumer hardware business, would be moved into this company.

SHORT-TERM REMEDIES:

Before the breakup is completed, the government is asking for a series of interim remedies that it will seek to impose "immediately." Microsoft will appeal.

- **Pricing:** Microsoft would be required to provide uniform terms for Windows operating system products licensed to PC makers.
- **APIs:** The company will have to disclose application programming interfaces (API), the links that allow applications to work with the operating system, other interfaces and technical information, to third-party vendors and PC makers as soon as they are being used by Microsoft's own software developers.
- **System configuration:** Microsoft will be prevented from restricting PC makers from modifying the boot sequence, start-up folder and other system aspects.
- **Antitrust:** The government is requiring Microsoft to hire an antitrust compliance officer.

ILLUSTRATION BY ERIC DANG

Private Cases Consolidated

While Microsoft battles its antitrust case, it will also fight a slew of private cases - but at least it won't send its lawyers all over the country to do so. A panel of federal judges last week consolidated 27 private antitrust suits pending against the software giant in a single court in Baltimore.

Microsoft spokesman Jim Cullinan said the company supports the consolidation because concentrating the cases in one court can reduce costs, which "helps the taxpayer."

- Robert L. Scheier

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FRANK HAYES/FRANKLY SPEAKING

Getting around HR

A CIO WRITES: "I used to work for a dysfunctional nonprofit organization. When the CEO finally caused the human resources manager to have a nervous breakdown, we hired a consultant to look at the process of hiring a replacement employee. The consultant's recommendation was to reduce the HR department to support personnel and let managers do direct hiring — using HR as a consultant, if needed. It required some training of the managers, but we reduced the time to hire and the costs significantly. If more HR departments acted like consultants who were trying to help hire the best employees, maybe IT people would appreciate them better."

A nervous breakdown? A *nervous breakdown?* That's *serious* anti-HR action!

OK, so most of us can't get rid of our HR departments. (Though I know from your mail over the past couple weeks that many of you would like to do just that.) Good HR people, we want to keep; lousy ones, we're stuck with.

But there *are* guerrilla tactics IT managers can use to make the hiring process easier, faster and more effective — even if HR is less than cooperative.

Take charge of the process. Listen to HR's recommendations, but make your own decisions. Don't bully or abuse the HR people; you won't make them more helpful by snarling at them. But they aren't in charge of the hiring process — you are.

Ask HR to send you copies of all IT résumés. HR can still send you a separate package of its top picks. Maybe you'll never get around to sifting through that big stack of résumés. But you'll have that option — and if someone looks good to you and not to HR, you'll have a fighting chance of interviewing that candidate.

Hire to solve problems, not to replace departures. If you lose a C++ coder with deep SQL Server experience or a network administrator who knows 10Base-T inside out, don't just add those qualifications to your requirements. First, analyze whether they're critical. If you've got enough C++ expertise on staff or your pressing need is supporting wireless users, why raise the bar and eliminate potential hires?

Ask your IT people what's needed. Maybe they know something you don't. OK, *probably* they know things you don't. Certainly, they can add insight into what your shop will need in the short and medium terms.

Turn your staff into recruiters with bonuses. If your company doesn't have a formal recruitment-bonus program, do it informally. If you think a potential hire is a bad risk because he was recommended by your staff's resident slacker, you can always filter that one out. But you're much better off when a current employee can vouch for a potential hire.

Take charge of the hiring process.

Delegate. You're already delegating part of the hiring process to HR. Delegate another piece to the team members who will work with your new hire. Let them hunt through those stacks of résumés — they may spot a gem that HR (or you) missed. If they find nothing special, at least they'll know why they're working shorthanded. But make it clear they aren't picking the final candidates — they're just helping with the search.

Hire on Internet time. A long schedule makes HR people and IT managers think there's time for a leisurely search to find a theoretically perfect candidate. Hey, nobody else in your IT shop is perfect — why pretend any new hire will be? Just hire 'em; you can invest the time and money you save in any necessary training.

And don't get sucked into the idea that running shorthanded instead of hiring now is ever a good idea. All you're doing is burning your people out — which means pretty soon you'll have even more hiring to do. ◗

Hayes, Computerworld's staff columnist, has covered IT for more than 20 years. His e-mail address is frank_hayes@computerworld.com.

SHARK TANK

AN INSIDER pilot fish says things are pretty grim at CompUSA these days. Carlos Slim, the Bill Gates of Latin America, bought the company a few months back and put Carlos Jr. in charge of streamlining things. 3,000 of 20,000 jobs gone, 19 of 28 company officers out the door. Some of that's culture clash: In Latin America, the bosses are the bosses, so forget about any touchy-feely, tell-me-what-you-want approach to employees, the fish says. (CompUSA says it's down only 1,500 jobs, but no one can confirm the 19 ex-execs because the director of PR got fired, too.) "The IT market is too good," the fish says. "There are no stock options. Why stay around?"

WASCAWY WABBIT! Monday following Easter, IT support pilot fish gets a frantic call from the marketing manager: "His all-in-one printer was making clacking noises and would not print," the fish says. Monkey wrench turns out to be a plastic egg, hidden as part of the annual Easter-egg hunt - by the conspicuously silent CFO down the hall.

PILOT FISH at a fast-growing distributor (up from 15 to 200-plus employees in the past few years) just got a memo from the boss. Because so many e-mails with attachments are clogging the never-upgraded server, IT will now report any big-message senders to the HR director, who will ask the employee why such a large e-mail was sent. Oh, and please send out those big e-mails only after 5 p.m. Those "large e-mails" all contain quotes for customers, grumbles the fish. And what does this outfit distribute, anyway? Midrange servers.

CFO COMPLAINS about not having enough bandwidth to keep an active connection with a B-to-B partner the company's doing development with. CIO says, "no problem" - he'll update the firewall to block more sites from employees. Which sites? Guns and ammunition and abortion rights and issues. Chuckles a fish who overheard, "If we have that many employees surfing guns and ammo sites, we have bigger problems than bandwidth!"

Score a Shark T-shirt: **sharky@computerworld.com**. And get more from the tank every day at *computerworld.com/sharky*.

The 5th Wave

"The kids are getting up right now. When we wired the house we added vibrating pager technology to their bunkbeds."

what do you want the Internet to be?"

"OPORTUNIDAD.
o kid ever has to shine shoes like I did.
'nless they actually want to."

S mm

eBusiness

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